



How to age awesomely

There's one thing in life that is certain. You will age. Nothing stays the same for long and sometimes it can feel hard to keep up as you get older. The same goes for health and fitness. How do you adapt as your body changes? How do you keep up the awesome even as you age?

Dietitian **Linia Patel** gives us the lowdown.

Improved medical, social, economic and general hygiene conditions have led to a population explosion over the last century. There has also been a demographic shift, with the over-65-year-olds now being the fastest-growing age group globally¹. Interestingly, gains of living longer have not necessarily translated to an increase in years lived without disability and disease. In fact, the greatest proportion of healthcare expenditure is now concentrated on those of older age². So, while you may not want to live forever, you should want the years you are alive to be good-quality years and this is why it's important to be familiar with healthy ageing.

The new science behind ageing

Age is only a number and is loosely associated with biological age. It is a process whereby a gradual accumulation over the

life-course of cellular and molecular damage results in an increased risk of age-related disorders^{2,3}. An exciting new area of anti-ageing research is linked to telomeres. Telomeres are segments of DNA at the end of your chromosomes – like the plastic tips at the end of your shoelaces that keep your laces together. At the beginning of your life, you have 15,000 to 35,000 pairs of telomeres linked to the end of each chromosome in your body⁴. As you age, your telomeres decrease in number (unfortunately ladies, there is another biological clock!). Your telomeres also become shorter and shorter. Their shortening process and the inability of your DNA to replicate itself properly (i.e., when there are only about 4,000 pairs of telomeres) is linked with ageing, development of diseases like cancer and, of course, a higher risk of death^{5,6}. While science still isn't 100% sure how telomere length affects how you age yet, what is clear is that the longer your telomeres, the longer your lifespan but, more importantly, the better quality of health as you age⁴.

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How the body changes with age

Physiological changes that result with ageing include sarcopenia, sensory impairment, decreased nutrient absorption and changes in immunocompetence. Sarcopenia is the loss of muscle mass and a key player in quality of life and independence. The more muscle mass you have as you age, the more functionally capable you are in day-to-day activities. So, as you age, you definitely want to preserve your muscle mass! As a natural process of ageing, after the age of around 30 years there is an average loss of 3-5% muscle mass for every decade, with the rate of decline increasing after 60 years, resulting in around one in 20 in this age group suffering the debilitating effects of sarcopenia^{2,3}.

Sensory impairments include the loss of vision, taste and the ability to chew well. This, in turn, could have a negative effect on appetite and ability to eat, for example. Things like a cup of tea and a couple of biscuits are appealing, yet not the most

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Worrying does give you wrinkles and there is research to prove it!”

nutritious of foods to be consuming a lot of. In addition to this, as you age you also have a decreased secretion of gastric acid, which can impact on nutrient absorption^{2,3}.

As the immune system matures with age, you also get changes in immunocompetence. After 60 years of age, you typically lose lymphoid tissue (typically your thymus), which means you have a reduced response to producing essential T-cells, which are the fighters in your immune system. In addition to this, your body isn't as good at recalling long-term immune memory. All these factors, in addition to weakening of skin and mucous membranes (these act as the body's first line of defence against external pathogens), mean that your immune system is not as effective at fighting infection and that the elderly are likely to experience low-grade inflammation. Inflammation is a key driver for any chronic disease³.

What role can nutrition play?

Nutrition can play a key role in determining healthy ageing, with the relationship being a bidirectional one. Ageing has an impact on nutritional status and poor nutrition can also impact on the ageing process. Micronutrient deficiencies are associated with both physical and cognitive decline. Vitamins D, C and B9, for example, play important roles in promoting bone density and reducing inflammation, while deficiencies in vitamin B12 place the elderly populations at risk of both neurological and bone-density problems. For a healthy functioning immune system, dietary minerals like zinc, iron and selenium are key. Sufficient intake of protein as you get older is important for maintaining muscle mass and preventing sarcopenia².

Research looking at targeting single nutrients in order to improve ageing has found inconsistent results (although beneficial effects can be seen in those most deficient at baseline).³ The strongest evidence for nutrition that supports healthy ageing is linked to overall dietary patterns. And, more than that, it's about the lifestyle you live. The Mediterranean-style dietary pattern, which focuses on nutrient-dense foods, minimal processed foods, a slower pace of life and social connection, for example, is thought to reduce telomere shortening^{2,3,4,5,6}. ■■■

HOW TO BEAT THE CLOCK PRACTICALLY

Here is how you can practically stay on top of your telomere game and age healthily:

1 Get your antioxidant fix. Colourful vegetables and fruits such as dark green leafy vegetables, bright red tomatoes, deep purple berries and orange butternut squash are bursting with vital plant-based nutrients called antioxidants. Antioxidants neutralise harmful free radicals in your body. Harmful free radicals exist everywhere in our environment but they are concentrated in pollution, chemicals, radiation, pesticides, alcohol, drugs, unhealthy food and even sunshine. Antioxidants are believed to protect your telomeres by helping to stop free radicals from damaging cells (a process called oxidative stress). However, studies have shown that supplements are not able to mimic all the health benefits of eating the whole foods^{6,7}.

Practical tips

- As a general rule, the richer the colour of the fruit or vegetable, the more antioxidants it contains.
- Fill half of your plate with different-coloured vegetables and fruit at each meal.

2 Top up on the sunshine vitamin (aka vit D). A recent King's College London study of more than 2,000 women between the ages of 18 and 89 found those with higher vitamin D levels showed fewer ageing-related changes in their DNA. After adjusting the results for the age of study participants, findings showed that women with higher levels of vitamin D were more likely to have longer telomeres in these cells, and vice versa. Another study looking at vitamin D and inflammation (another promoter of ageing) found that those with higher vitamin D levels had lower levels of inflammation. Vitamin D is known to be a potent inhibitor of your body's inflammatory response, which means it protects your body from the deterioration of ageing⁷.

Practical tips

- To maximise vitamin D absorption, get in the sunshine (without any sunscreen) for at least 20 minutes per day between 10am and 4pm in the summer months. That said, of course you still need to be practising safe sun

exposure.

■ Government recommendations are that people take 10 micrograms of vitamin D a day. If you choose to take vitamin D supplements:

- ✓ children aged one to 10 should not have more than 50 micrograms a day
- ✓ infants (under 12 months) should not have more than 25 micrograms a day
- ✓ adults should not have more than 100 micrograms a day, with the recommended amount 10 micrograms a day.

■ If you want to know what your vitamin D levels are, ask your GP to check your blood levels.

3 Control and reduce chronic stress.

Worrying does give you wrinkles and there is research to prove it! The reason for this is that, when you are stressed, your body has a fight or flight reaction that releases stress hormones like cortisol and adrenaline. The body is very good at handling short-term acute stresses; however, the problem with our go-go-go 21st century lives is that our bodies are pumping out stress hormones almost constantly and this is not good news. A recent study looking into the impact of work-related stress and telomere length found that individuals who reported the most job stress had the shortest telomeres⁶. Shortening of telomeres = accelerated biological age.

Practical tips

Bust stress by:

- keeping intake of refined carbs and sugar in check
- curbing the caffeine habit (two or three coffees and teas maximum per day)
- using exercise to de-stress – not booze
- practising mindfulness and meditation.

4 Dabble with intermittent fasting.

There is an increasing host of research showing that intermittent fasting may in fact be an effective strategy for slowing the ageing process, particularly in men. Animal research has shown calorie restriction of up to 40% fewer calories than normal to have an impressive positive effect on disease, markers of ageing and life span¹⁰. The results from a pilot study in humans (Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy [CALERIE]) also showed that overweight adults who cut their calorie consumption

by 20-30% lowered their fasting insulin levels and core body temperature. Both of these changes have been linked to increased longevity in animal models. The lower calorie intake also reduced their risk for major causes of mortality, such as heart disease and diabetes⁹. There is still more research needed to fully understand the long-term impact but these initial results are certainly food for thought.

Practical tips

- Women should be cautious with fasting. Speak to a health professional first.
- Men should consider fasting for one day a week and eating normally (healthy and balanced, of course) for the other six days or simply begin limiting the amount of fasting you do between meals.

5 Move more. From preventing diabetes to boosting mood and toning up those thighs, here is yet another reason to exercise regularly. A recent study showed that those who did some type of exercise on a regular basis had longer telomeres than the people who didn't exercise at all (on average 75% longer than their sedentary counterparts). The correlation between telomere length and exercise activity seemed to be strongest among those in middle age, also suggesting that it's never too late to start a fitness programme! Not only that but the study suggested that both duration of exercise and intensity had an impact on telomere length¹¹. Now, before you freak out, this doesn't mean that you need to become an ultra-endurance nut. However, what it does suggest is that engaging in intense exercise like high-intensity interval training (HIIT) a couple of times a week is the most effective all-natural approach to keeping your telomeres long and happy!

Practical tips

- Get into the habit of doing 10,000 steps a day.
- Engage in some HIIT training a couple of times a week. Start small and build on this as you get fitter. Five minutes is better than no minutes. **fp**



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