

Human lifespan has hit its natural limit

Level 2 • Upper intermediate

1 Warmer

Answer these questions.

- How old was the oldest human who ever lived?
a. 112 years b. 122 years c. 132 years
- According to the World Health Organization, which country has the longest average life expectancy?
a. the USA b. Switzerland c. Japan
- What was the average life expectancy in Europe in the eighteenth century?
a. 35 b. 45 c. 55

2 Key words

Fill the gaps in the sentences using these key words from the text. The paragraph numbers are given to help you.

claim	prolong	vaccine	frail	lifespan
apparent	longevity	mutation	mortality	by-product

- A person's _____ is the length of time that he or she lives or is expected to live. (para 1)
- If you _____ something is true, you say it is true even though there is no definite proof. (para 2)
- _____ is the fact of having a long life or existence. (para 3)
- _____ is another word for *death*. (para 4)
- A _____ is a substance injected into the body to protect it from disease. (para 4)
- An _____ limit is one that seems to exist although it may not actually exist. (para 7)
- A _____ is something that has not be planned but happens as a result of another situation. (para 7)
- If medical treatments _____ someone's life, they make it last longer. (para 8)
- If a person is _____, they are weak and not very healthy. (para 8)
- A _____ is a change in the genes of a plant or animal that causes it to become different from others of its type. (para 10)

3 Find the information

Find the following information in the text as quickly as possible.

- Data from how many countries was used in the Human Mortality Database?
- What nationality was the oldest human who ever lived?
- Which company is the owner of Calico?
- What is a supercentenarian?
- What, according to the co-author of the research in the article, is the chance of seeing a person aged 125 in a given year?
- How old was the Dutch supercentenarian when he died?

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Human lifespan has hit its natural limit, research suggests

Nicola Davis

5 October, 2016

- 1 Recent research suggests that our lifespan has already reached its natural limit. The oldest human who ever lived, according to official records, was 122-year-old Frenchwoman Jeanne Louise Calment, who died in 1997. Now, a team of American researchers suggest Calment's record will not be broken any time soon, as their research shows that though more people reach old age each year, the limit for human lifespan appears to be around 115 years. "The chances are very high that we have really reached our maximum lifespan for the first time," said Jan Vijg, co-author of the research from the Albert Einstein College of Medicine in New York.
- 2 Aubrey de Grey, chief scientific officer at theSENS Research Foundation, has claimed that the first person to reach 1,000 years old is likely to be alive today. But the new study suggests that is highly unlikely. The result, says Vijg, is that people should focus on enjoying life and staying healthy for as long as possible. "That's where we have to invest our money," he said.
- 3 The idea of extending the human lifespan has captured imaginations for thousands of years. Among scientists, enthusiasm for the idea has grown in recent years, with a number of Silicon Valley companies joining academic institutions in attempting to address the question of longevity – among them Google's California Life Company, or Calico, as it is known.
- 4 But the researchers, writing in the journal *Nature*, describe how analysis of records from a number of international databases suggests there is a limit to human lifespan and that we have already reached that limit. Using data for 41 countries from the Human Mortality Database, the team found that life expectancy at birth has increased over the last century. That, says Vijg, is the result of a number of factors, including improvements in childbirth and maternity care, clean water, the development of antibiotics and vaccines, and other health measures.
- 5 While the proportion of people surviving to 70 and over has risen since 1900, the rate of improvements in survival differ greatly between levels of old age. Large improvements are seen for ages 70 and up but for ages 100 or more, the rate of improvement drops rapidly. "For the oldest old people, we are still not very good at reducing their mortality rates," said Vijg. What's more, in 88% of the countries, the ages showing the greatest rate of improvement have not changed since 1980.
- 6 The researchers then turned to the International Database on Longevity and analysed data from France, the UK, the US and Japan – four countries with a high proportion of those aged 110 or above – so-called "supercentenarians". The researchers found that the maximum reported age at death rapidly increased between 1970 and the early 1990s, rising by around 0.15 years every year. But in the mid- to late 90s, a limit was reached, with the yearly maximum reported age at death at around 115 years.
- 7 "Based on the data we have now, the chance that you will ever see a person of 125 years in a given year is about 1 in 10,000," said Vijg. The apparent limit to human lifespan, the authors say, is not down to a set of biological processes specifically limiting human life. Instead, it is a by-product of a range of genetic programmes that control processes such as growth and development.
- 8 Henne Holstege from VU University, Amsterdam led research into Dutch supercentenarian Hendrikje van Andel-Schipper, who died aged 115. She says the new study suggests "there seems to be a wall of mortality that modern medicine cannot overcome. If you die from heart disease at 70, then the rest of your body might still be in relatively good health. So, a medical intervention to overcome heart disease can prolong your lifespan," she said. "However, in centenarians, not just the heart but all bodily systems have become aged and frail. If you do not die from heart disease, you die from something else."
- 9 But Tom Kirkwood of Newcastle University is confident that the lifespan ceiling will continue to rise. "There is no set programme for ageing and we know that the process, which is ultimately driven by the build-up of faults and damage in the cells and organs of the body, is partly flexible," he said. "Even without any change in the biology of ageing, it is almost inevitable that the current record will be broken."

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10 Cynthia Kenyon, vice president of ageing research at Calico, is also optimistic. "No one predicted that single-gene mutations could slow the ageing process and double the lifespans of animals. But they can," she said. "While we don't have demographic data to support the idea that

the maximum human lifespan is now increasing, that certainly doesn't mean it's impossible."

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4 Comprehension check

Are these statements true (T) or false (F) according to the text?

1. The first person to reach 1,000 years is definitely alive today.
2. The research published in the journal *Nature* suggests we have already reached the limit of human lifespan.
3. Life expectancy has increased as a result of medical improvements and other health measures.
4. According to Jan Vijg, we are very good at reducing the mortality rates of the oldest old people.
5. Tom Kirkwood is doubtful that the lifespan ceiling will continue to rise.
6. In most of the countries in the database used in the research, the ages showing the greatest rate of improvement in mortality rates have not changed since 1980.

5 Find the word

Find the following words and phrases in the text.

1. an adjective meaning *probably not going to happen* (para 2)
2. a two-word phrasal verb meaning *concentrate on something and pay particular attention to it* (para 2)
3. a two-word noun phrase meaning *the process of looking after pregnant women or those who have just had a baby* (para 4)
4. a noun meaning *a quantity of something that is a part of the whole* (para 5)
5. a two-word phrase meaning *caused by* (para 7)
6. an adjective meaning *very old* (para 8)
7. an adverb meaning *basically* (para 9)
8. an adjective *impossible to avoid or prevent* (para 9)

6 Two-word phrases

Match the words in the left-hand column with those in the right-hand column to make phrases from the text.

- | | |
|---------------|----------------|
| 1. life | a. rate |
| 2. mortality | b. limit |
| 3. biological | c. expectancy |
| 4. heart | d. institution |
| 5. academic | e. disease |
| 6. natural | f. process |

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7 Word-building

Complete the table using words from the text.

	verb	noun
1.	improve	
2.	develop	
3.	grow	
4.	intervene	
5.	imagine	
6.	survive	

8 Discussion

Discuss the statements.

- If people lived for 1,000 years, the world's resources would soon run out.
- I would hate to live for 1,000 years. Just imagine how boring everything would be.

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KEY

1 Warmer

1. b
2. c
3. a

2 Key words

1. lifespan
2. claim
3. longevity
4. mortality
5. vaccine
6. apparent
7. by-product
8. prolong
9. frail
10. mutation

3 Find the information

1. 41
2. French
3. Google
4. someone who is aged 110 or above
5. about 1 in 10,000
6. 115

4 Comprehension check

1. F
2. T
3. T
4. F
5. F
6. T

5 Find the word

1. unlikely
2. focus on
3. maternity care
4. proportion
5. down to
6. aged
7. ultimately
8. inevitable

6 Two-word phrases

1. c
2. a
3. f
4. e
5. d
6. b

7 Word-building

1. improvement
2. development
3. growth
4. intervention
5. imagination
6. survival