

PEOPLE AGE AT WILDLY DIFFERENT RATES, STUDY CONFIRMS

Old before your time? People age at wildly different rates, study confirms

Tests on physiological markers in nearly 1,000 38-year-olds found that some had biological ages many years older than their birthdates would suggest

Ian Sample, Science editor 6 July, 2015

- 1 Scientists have confirmed that people grow old at radically different rates, with some ageing much faster than others. A study of nearly one thousand 38-year-olds found that, while most had biological ages close to the number of birthdays they had notched up, others were far younger or older.
- 2 Researchers used 18 physiological markers, including blood pressure, organ function and metabolism, to assess the biological age of each of the participants. For some, the past dozen years had taken no obvious toll on their body's biology. But others were not so fortunate. A good many participants had biological ages in the 50s, while one, described by scientists as an "extreme case", had a biological age of 61. That meant that, for every birthday over the past dozen years, their body had aged three years.
- 3 "The overwhelming majority are biologically in their mid-40s or younger but there are a handful of cases who are in pretty bad shape. In the future, we'll come to learn about the different lives that fast- and slow-ageing people have lived," said Daniel Belsky at Duke University in North Carolina.
- 4 The researchers drew on data gathered on 871 people enrolled in the Dunedin study, a major investigation that has tracked the health and broader lives of around 1,000 New Zealanders born in 1972 or 1973 in the town of Dunedin. Of the original group, 30 had died by the age of 38 due to serious diseases such as cancer or by accidents, suicides and drug overdoses.
- 5 "Our goal was to see if we can measure ageing in young people," said Belsky. "It's becoming increasingly clear that ageing is really the cause of much of the disease and disability burden we face but our existing science is based on ageing in older people who already have a lot of age-related diseases." According to Belsky, studying ageing in younger people gives researchers the best chance of teasing apart the biological changes that drive ageing from those that underpin specific diseases.
- 6 The scientists drew up a list of 18 biological markers that, together, reflect a person's biological age. They included measures of kidney and liver function, cholesterol levels, cardiovascular fitness and the lengths of telomeres, which are protective caps that sit on the ends of chromosomes. The set of markers were measured when the volunteers were aged 26, then 32 and, finally, at the age of 38. The researchers then looked to see how much the markers changed over time, to produce a "pace of ageing" figure.
- 7 Across the group, the biological ages of the 38-year-olds varied from 28 to 61. If a 38-year-old had a biological age of 40, it implied a "pace of ageing" of 1.2 years per year over the 12-year study period. "Even before they develop age-related diseases, their physiology shows signs and there is great variation in how fast people aged in the past 12 years," Belsky said.
- 8 People with older biological ages fared worse on tests that are typically given to people over 60. These included tests of balance and coordination but also mental tasks, such as solving unfamiliar problems. The biologically older people also reported more difficulties with activities like walking up the stairs.
- 9 The scientists went on to see whether volunteers' biological ages matched how old they looked. They invited students to view photos of the study participants and guess their ages. The biologically older people were consistently rated as looking older than their 38 years. "Already, before midlife, individuals who were ageing more rapidly were less physically able, showed cognitive decline and brain ageing, self-reported worse health and looked older," the scientists write. The next step in the research is to sift through the lives of the Dunedin participants to see how factors such as lifestyle, medical history, family circumstances and stressful events might affect the speed at which people age.
- 10 Belsky called the study a "proof of concept" for using biological markers to measure the ageing process in people who are too young to have age-related diseases. An objective measure of biological age, he said, could be used to assess whether new anti-ageing therapies work or not in a reasonable time frame. "What we need are measurements that can show whether these therapies are working so we don't have to wait 50 years to see if someone is still alive or not. We want a real-time barometer of how a person is doing and whether the therapy is really changing their rate of ageing," he said.
- 11 The ultimate goal is to target ageing, instead of the multiple separate diseases that people are increasingly likely to develop as they age. "As we get older, our risk grows for all kinds of different diseases. To prevent multiple diseases simultaneously, ageing itself has to be the target," Belsky said.

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Task 1. Fill the gaps in the sentences using these key words from the text.

physiological disability decline barometer tease apart cardiovascular
radically enrol overdose track

1. If something is _____ different from something else, it is extremely different.
2. _____ factors relate to the way that the human body operates.
3. If you _____ on a course or a study, you put your name on the official list of its students or participants.
4. If you _____ something, you follow its development or progress.
5. If you take an _____, you die because you took too much of a drug.
6. _____ is a condition in which someone is not able to use a part of their body or brain properly.
7. If you _____ two or more things, you separate them into individual pieces.
8. _____ fitness relates to the heart and blood vessels.
9. A _____ is a gradual reduction in the amount or quality of something.
10. A _____ is an instrument that measures atmospheric pressure but also something that shows how a situation is changing.

Task 2. Find the following information in the text.

1. What is a telomere?
2. How many physiological markers were used by the researchers in the study?
3. What was the actual age of the people who participated in the study?
4. What was the biological age of the 'extreme case' in the study?
5. How many people enrolled in the Dunedin study?
6. How many of these people had died by the age of 38?

Task 3. Match the verbs in the column with the nouns or noun phrases in the second column.

1	draw on		someone's age
2	draw up		a disease
3	develop		signs of something
4	solve		data
5	show		a problem
6	guess		a list

Task 4. Fill the gaps in the sentences using the correct form of the word in brackets at the end of each sentence.

1. A number of _____ in the study had biological ages in the 50s. [PARTICIPATE]
2. The _____ majority are biologically in their mid-40s or younger. [OVERWHELM]
3. It is becoming _____ clear that ageing is the cause of most diseases. [INCREASE]
4. Telomeres are _____ caps that sit on the ends of chromosomes. [PROTECT]
5. The _____ older people were consistently rated as looking older than 38. [BIOLOGY]
6. _____ events may affect the speed at which people age. [STRESS]