

Western society is chronically sleep deprived

Level 1 • Pre-intermediate / Intermediate

1 Warmer

Answer the questions.

1. How many hours do you usually sleep each night?
2. What is the name for the 24-hour cycle that our bodies follow?
 - a. circular rhythm
 - b. circumference rhythm
 - c. circadian rhythm

Scan the article to check your answer.

2 Key words

Match the key words with the definitions. Then, find them in the article to read them in context. The paragraph numbers will help you.

adapt

dimly lit

gene

influences

organism

1. a pattern of chemicals within a cell that carries information about the qualities passed to a living thing from its parents _____ (para 2)
2. a living thing such as a person, animal or plant _____ (para 3)
3. change your behaviour so that you can deal with a new situation _____ (para 3)
4. the effects that something has on the way something happens _____ (para 5)
5. when the lights in a place are not very bright _____ (para 5)

shift

catch up

deprived

jet lag

stroke

6. not having enough of something that you need _____ (para 6)
7. the feeling of being very tired and sometimes confused because you have travelled on a plane to a part of the world where the time is different _____ (para 11)
8. go faster so that you reach someone or something _____ (para 11)
9. a period of work time in a factory, hospital or other place where some people work during the day and some work at night _____ (para 13)
10. a medical condition in which blood is suddenly blocked and cannot reach the brain _____ (para 14)

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'Western society is chronically sleep deprived': the importance of the body's clock

Hannah Devlin

6 October, 2017

- 1 We all know about the cycle of day and night on our planet so the idea of an internal body clock might not sound new. But in science, asking the questions "why?" and "how?" can give the most interesting answers.
- 2 Three American biologists, Jeffrey Hall, Michael Rosbash and Michael Young, were awarded the Nobel Prize in Physiology or Medicine for their discovery of the master genes that control the body's circadian rhythms.
- 3 Using flies, the team found a "period" gene that controls the rhythm of a living organism's daily life. This allowed scientists to explain how plants, animals and humans adapt their biological rhythm so that it fits with the turning of the Earth.
- 4 Scientists discovered the same gene in mammals and that it is expressed in a tiny area of the brain.
- 5 Modern lifestyles may no longer be controlled by sunrise and sunset but light is still one of the strongest influences on our behaviour and happiness. For example, bright lights before bedtime and spending the whole day in a dimly lit office can affect the natural circadian cycle – it makes people sleepy in the morning and too awake to fall asleep easily at night.
- 6 Rosbash said, "It's a serious public health problem. All of Western society is badly sleep deprived."
- 7 Not following the natural circadian cycle can cause long-term health problems that are much more serious than tiredness.
- 8 Scientists have shown that there are clock genes in almost every cell type in the body. The activity of blood, liver, kidney and lung cells all rise and fall on a 24-hour cycle.
- 9 It is like having tiny clocks inside almost every cell type in our body. This network of clocks keeps things working together inside us.
- 10 Clifford Saper, a professor of neuroscience at Harvard Medical School, said, "People think that they do not have to follow the rules of biology and can just eat, drink, sleep, play or work whenever they want. They are wrong."
- 11 The discovery explains why jet lag feels so bad: the master clock in our brain adapts quickly to changing light levels but the rest of our body needs longer to catch up – and it catches up at different speeds.
- 12 "Jet lag is so awful because the different parts of the circadian network are out of time with each other," said Professor Russell Foster, chair of circadian neuroscience at the University of Oxford.
- 13 It also helps to explain why shift workers are more likely to suffer from heart disease, dementia, diabetes and some cancers. Obesity is also more common among those with irregular sleep patterns.
- 14 Our risk of serious illness rises and falls throughout the day and night. People are 49% more likely to have a stroke or heart attack between 6am and 12 noon than at any other time of the day. This is linked to a circadian rise in blood pressure in the early morning, which happens even if you're lying in bed not doing anything.
- 15 So it makes sense to take certain blood pressure medications early in the morning, before you get out of bed. The liver makes cholesterol more quickly at night. So medicines that lower cholesterol work best if you take them before going to bed.
- 16 With this new understanding, doctors and others are starting to understand the power of the biological clock. Some schools, for example, are starting later in the morning because the teenage body clock runs several hours later than the body clock of adults.

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First published in *The Guardian*, 06/10/17

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3 Comprehension check

Use some of the key words from task 2 to complete these statements about the article.

1. The article is about the discovery of a 'period' _____ that controls the body clock in all living _____.
2. Animals and humans _____ their biological rhythm to the 24-hour cycle of the Earth.
3. Light _____ our body clock so people who work in _____ offices and watch bright TV at night might not sleep well.
4. One of the Nobel Prize scientists says that people in Western society do not get enough sleep. They are sleep _____ and this can lead to serious health problems.
5. The discovery of the period gene helps doctors to understand why people usually have heart attacks or _____ at certain times of the day.
6. It also explains why jet lag makes us feel so bad. It's because the period genes in the cells in our body need time to _____ with each other.

4 Discussion

Discuss the following.

- Do you get enough sleep?
- Do you sleep well? If not, why not?
- How do you feel when you don't get enough sleep?
- Have you ever had jetlag? If so, talk about:
 - where you flew from and to;
 - what time of day you took off and landed;
 - what the time difference was (e.g. *New York is ... hours behind London*);
 - how you felt the next day.
- Have you ever worked shifts? If so, explain the shift patterns (e.g. 6am to 2pm for three days, then ...).
- How did you feel?
- When does it get light in the mornings and dark in the evenings?
- Does this change throughout the year?
- How does this affect your sleep? E.g. *It's harder to get up in the winter.; I usually go to bed later in the summer.*
- What time does school begin in your country?
- Do you think teenagers should be allowed to start school later?

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5 Giving advice

Give each other tips about how to sleep well.

I think
that ...

... helps me
to sleep

Have you
tried ...?

Maybe you need
a new ...

6 Webquest

The article is about the Nobel Prize in Physiology or Medicine. What other prize categories are there?

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KEY

1 Warmer

c.

2 Key words

1. gene
2. organism
3. adapt
4. influences
5. dimly lit
6. deprived
7. jet lag
8. catch up
9. shift
10. stroke

3 Comprehension check

1. gene; organisms
2. adapt
3. influences; dimly lit
4. deprived
5. strokes
6. catch up