IV. LISTENING HOMEWORK

/♫3.03 - 3.04/. Listen and answer the questions 1 - 10.

Questions 1–5

What comment do the speakers make about each painkiller?

*Choose **FIVE** answers from the box and write the correct letter, **A–F**, next to Questions 1–5.*

Common analgesics

1 Paracetamol .....
2 Ibuprofen .....
3 Aspirin .....
4 Codeine .....
5 Morphine .....

Comments

A It is considered unsuitable for children.
B It is extremely dangerous if you take too much.
C It is not as strong as other analgesics.
D Its use requires careful monitoring.
E It can have slightly unpleasant after effects.
F It works at the source of the pain.

Questions 6–10

Complete the flow chart below.

*Write **NO MORE THAN TWO WORDS** for each answer.*

Aspirin: a brief history

Ancient Greece, about 2500 BCE:
6 ..... from willow trees are used to make a drink with a painkilling effect.

↓

Italy, 1823:
The **7** ..... in the willow (salicin) is identified and extracted.

↓

Germany 1838:
Salicin is also discovered in the meadowsweet flower.

↓

France, 1853:
Salicin is first produced in a **8** ..... (called salicylic acid).

↓

Germany 1893:
Acetyl is added to salicylic acid. Irritant qualities are reduced.

↓

Germany 1897:
A **9** ..... of acetyl salicylic acid is first produced by Bayer (1897).

↓

Germany 1899:
Aspirin goes on sale in 1899 after successful **10** ..... .

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V. READING HOMEWORK

Scientific Research Reveals Hidden Benefits of Regular Exercise

Concerns that children in developed countries are leading increasingly sedentary lifestyles are growing. Recent research suggests that almost nine in ten children fail to get the 60 minutes of daily exercise which is the minimum recommended for good health, and a third completed less than an hour each week. In most cases, this is because they are spending hours every day glued to televisions, the Internet and games consoles. Alarmingly, there is evidence to suggest that this lack of exercise is not only having a negative physiological effect on them, but is also adversely affecting their academic performance at school.

Psychologist Dr Aric Sigman believes that regular exercise can significantly improve pupils' academic ability, and suggests that access to high-quality PE lessons is just as likely to have a long-term impact on children's education as time spent in conventional classrooms. He also supports the long-held conviction that vigorous physical activity is much better than moderate activity. 'Children should spend at least an hour a day doing some form of vigorous exercise,' he says. And his message to schools and parents is obvious. 'Schools and parents should devise ways of increasing physical activity in and out of school time.' This, he believes, is the key to improved academic performance.

For those who are skeptical about this, and no doubt there are many, he quotes two pieces of research that underline the link between physical activity and brain capacity. One study compared brain capacity and test scores among two groups of nine- and ten-year-olds, one with higher levels of physical fitness than the other. It revealed that fitter pupils had a twelve percent larger brain capacity than their peers, which was associated with better performance in cognitive tests. They were able to complete the test more quickly and got more answers correct. A second study of 1.2 million male teenagers in Sweden was perhaps even more revealing. It found that those who were fit were more likely to have a high IQ and go on to university.

Dr Sigman says, 'Physical activity is thought to help a child's cognitive processes by increasing blood and oxygen flow to the brain. This increases levels of chemicals like endorphin in the brain which decrease stress and improve mood. It also increases growth factors that help create new nerve cells and support the connections between brain cell synapses that are the basis of learning.

According to other researchers, there is also evidence that suggests regular exercise can increase the size of crucial parts of the brain, and that children who are fit also tend to be better at multi-tasking and performing difficult mental tasks than their unfit friends. Professor Art Kramer, Director of the Beckman Institute for Advanced Science and Technology at the University of Illinois, who led the research, said their findings could have important implications for improving children's performance at school. He said it could also be used to help people combat memory loss and retain problem-solving skills in old age.

'It is a sad fact of aging that our brain function decreases as we get older,' says Kramer. 'Increasingly, people are also living more sedentary lifestyles. While we know exercise can have positive effects on cardiovascular diseases and diabetes, we have found it can also bring about improvements in cognition and brain function. Aerobic exercise is best for this, so by starting off doing 15 minutes a day and working up to 45 minutes to an hour of continuous exercising, we can see some real improvements in cognition after six months to a year.'

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Professor Kramer's team did a lot of neuroimaging work alongside their studies, which provided visual evidence to show that brain networks and structures actually change with exercise. This, they say, is the reason why their aerobically-fit test subjects were found to exhibit superior cognitive control to those who were less fit, and that regular exercise helped to improve memory, attention and an increased ability to multi-task. The hippocampus, that part of the brain involved in memory, of elderly people who exercised regularly for more than six months increased by two percent, effectively reversing brain aging by one to two years.

Tests carried out on children also yielded some interesting results. One test involved them crossing a 'street' using a virtual reality simulation. Fitter children were better at crossing the street when distracted by music or holding a conversation on a hands-free mobile phone compared to those who were less fit. While both groups tended to walk at the same speed, the children who were less fit often misjudged the speed and distance of the computer-generated vehicles. 'The low fitness kids were just as good as at crossing the street when it was the only thing they were doing,' says Kramer. 'If they were listening to music or talking on the headset, they performed badly. They often ended up with the screen going red to show they had been hit. One way to look at it is that fit children think more efficiently and so are better at multi-tasking.'

Professor Kramer presented his findings at the American Association for the Advancement of Science annual meeting in Vancouver, where other research presented showed that reducing the number of calories we consume could help to prevent brain disorders, especially in the elderly. Dr Mark Mattson, a neuroscientist at the National Institute of Aging in Baltimore found that restricting people's diets to just 500 calories every other day increased production of proteins that are known to protect neurons from damage. 'There is considerable evidence that doing this is not only good for your heart, but also good for your brain,' he said.

Questions 1–5

Do the following statements agree with the claims of the writer?

Write

YES	*if the statement agrees with the claims of the writer*
NO	*if the statement contradicts the claims of the writer*
NOT GIVEN	*if it is impossible to say what the writer thinks about this*

1 The possible impact of a sedentary lifestyle on the way children perform in the classroom is very worrying. .....

2 It is only recently that people have discovered exercise is more beneficial for you when you put more effort into it. .....

3 It is unclear what Dr Aric Sigman thinks schools and parents should do. .....

4 There are probably a lot of people who disbelieve Dr Sigman's theory. .....

5 Researchers were surprised to discover a link between levels of fitness in Swedish teenagers and their IQ. .....

Questions 6–10

Complete the summary using the list of words, A–I, below.

Dr Sigman believes that when children do physical exercise, they experience less **6** ..... as a result of a chemical change caused by increased blood and oxygen flow to the brain. Other researchers, such as Professor Art Kramer, think there is **7** ..... that some parts of the brain become bigger, and fit children are better than unfit children at doing complicated **8** ..... that require mental thought. Among other things, these scientific **9** ..... could be used to benefit the **10** ..... when it comes to fighting memory loss and keeping the skills that allow them to solve problems.

A ancients	**D** elderly	**G** performances
B anxiety	**E** exercises	**H** possibility
C discoveries	**F** anger	**I** proof

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Questions 11–13

Choose the correct letter, ***A, B, C*** *or* ***D.***

11 Which of the following is true, according to Professor Art Kramer?

A People become less active as they grow older.

B Exercising is an effective way of preventing diseases like diabetes.

C One particular type of exercise is more effective than others.

D When exercising, you should take short breaks during the exercise period.

12 What did Professor Kramer's neuroimaging work show?

A Exercising physically alters the brain.

B Unfit people have poor memories.

C A particular part of the brain becomes more active during exercise.

D Exercise can reduce ageing of the brain for up to two years.

13 What does *doing this* on line 110 refer to in the final paragraph?

A changing the kinds of food we eat

B eating no more than 500 calories a day

C eating foods that are high in protein

D eating less on certain days

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