

Part 7

You are going to read an article written by an architect about his work. For questions 43–52, choose from the sections (A–D). The sections may be chosen more than once.

Mark your answers on the separate answer sheet.

In which section does the writer

warn that exercising may have the opposite effect to that intended?	43	
mention an increase in the size of something as the result of exercise?	44	
say even very gentle exercise can have a positive impact?	45	
explain why a comparison is a little misleading?	46	
give an example of an improvement in students' ability to focus?	47	
say what many people believed about the benefits of exercise has been proved correct?	48	
give advice on how to recall information more effectively?	49	
mention a doubt about why people sometimes experience a change of mood?	50	
warn that a particular type of exercise may not help with problem solving?	51	
welcome the idea of matching exercise type to particular mental challenges?	52	

How physical exercise makes your brain work better

A The brain is often described as being 'like a muscle', however, this may not always be a helpful way of thinking about it. For example, if you want to improve the strength of your arms, you can exercise them and feel the results. When it comes to exercising your brain, this, of course, isn't possible. But it seems that by working your body's muscles you're actually benefitting your brain too. What's more, different physical activities can change the structure of your brain in different ways. As a result of research into how this happens, people will be able to select the form of exercise which best suits their needs – what to do if, for example, they want to perform well in a memory test – and this is good news. Researchers are still trying to work out why exercise seems to be so good for the brain. One possibility is that it increases blood flow. Exercise may also encourage the creation of new cells that are responsible for carrying messages between the brain and body. Until recently, few people thought this could happen in adult brains, but scientists now see this as a real possibility.

B It is well known that hard physical activity can have a positive effect on how you feel. For example, runners often get what's referred to as a 'runner's high' – that great feeling that follows intense exercise. Many people think this is due to endorphins, the chemicals in your bloodstream responsible for making you feel happy, rushing to your brain. However, although levels of endorphins rise in the bloodstream when you exercise, it's not clear how much actually gets into the brain. Research into this is still being carried out. The part of the brain that responds strongly to exercise is called the hippocampus. Experiments in children, adults and the elderly show that this brain structure grows as people get fitter. As the hippocampus is very important for learning and memory, this finding partly explains the memory-boosting effects of improved fitness.

C As well as slowly improving your memory, physical exercise can have a more immediate impact on the learning process itself. Researchers have shown that walking or cycling at the same time as trying to learn something new, for example foreign language vocabulary, is really helpful. So exercise while you revise. Don't push it too hard, though: extreme workouts can raise your stress levels, which, of course, can have a negative effect on your ability to remember things. Exercise can also help you to stay on task. In one study, allowing school pupils a 20-minute exercise session between lessons was found to improve their attention spans. Meanwhile, another study looked at the effects of daily after-school sports classes over a school year. The children, of course, got fitter. Less predictably, they showed greater levels of concentration in class: they became better at ignoring distractions and remembering and using what they'd learnt.

D And you may not have to get out of breath to improve your attention span. Just 10 minutes of play aimed at improving coordination skills, like bouncing two balls at the same time, has been shown to have real benefits for people's ability to concentrate. A lot of people have claimed that doing physical exercise, even just walking, makes you able to think more imaginatively. Psychologists have now found this to be the case. Walking, either outdoors or on a treadmill in a gym, can boost creative thinking. On the other hand, if you're struggling with your homework and looking for a single solution to a maths problem, then a relaxing walk isn't necessarily what you need. It seems that what you do with your body will inevitably affect your brain and how well you're able to learn new things. So get up and get active!