

Key Stage 4 Science home learning term 3 week 6

Controlling the body - Scary stuff!



What happens when you get scared? Your hair stands on end. You begin to sweat. You might even begin to feel sick. All these changes are controlled by adrenalin. Adrenalin is a hormone (a chemical made in your body). It gets your body ready for action. You may begin to feel 'on edge' or 'twitchy'. Some sports people think they need to be a bit scared before important competitions, just to help them do their best. Endocrine glands make hormones and pass them into the bloodstream. Adrenalin is made by the adrenal glands. John carries adrenalin around with him. He is allergic to peanuts. If he eats them, or even just smells them, he can go into shock. His heart could stop. A shot of adrenalin from a specially designed injector could keep his heart going and save his life.

What types of things make you nervous?

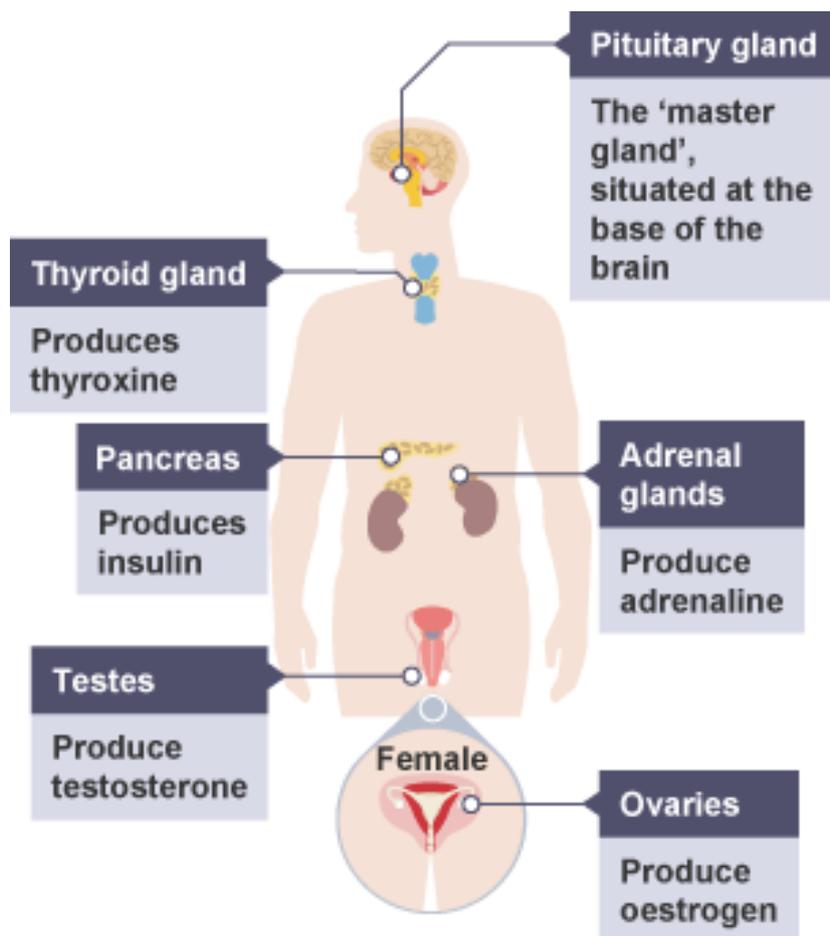
Do you think being nervous before a match or a test helps you do better? Why?

How could you find out?



John is giving himself a shot of adrenalin with an epi-pen, which he carries with him.

The blood carries the hormones to where they are needed. These are called the hormone's target organ. Adrenalin affects the heart, brain, skin, eyes, and even your gut!



Pituitary gland: produces many different hormones that affect growth and development.

Thyroid gland: hormones, called thyroxine and triiodothyronine, which increase your body's metabolic rate. The body's metabolic rate is how quickly the cells in your body use the energy stored within them.

Adrenal glands: produce adrenalin to make the body ready for action.

Pancreas: produces insulin, which helps to control the level of sugar in the blood.

Testes: produce male hormones.

Ovaries: produce female hormones.

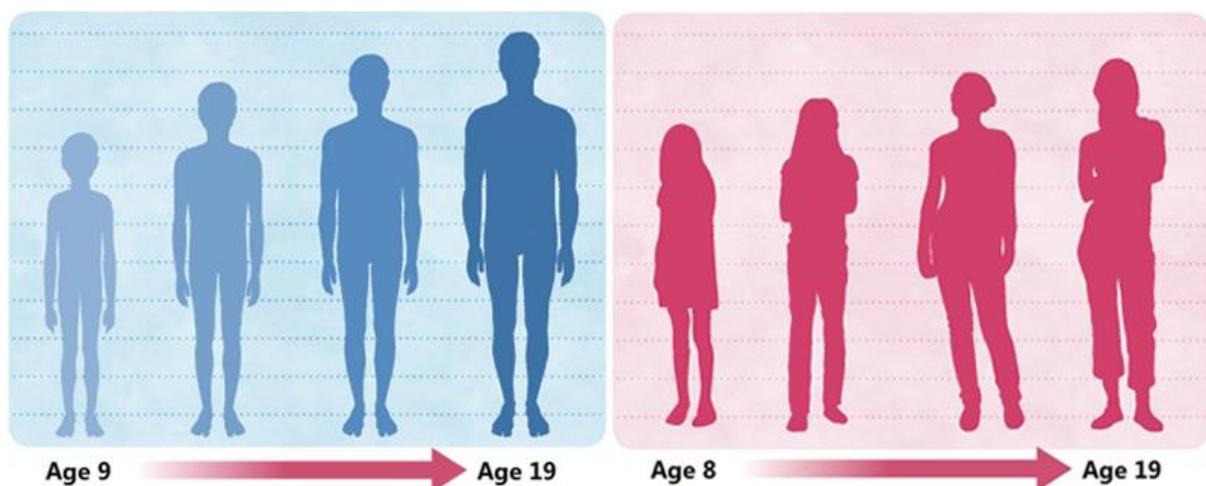
What hormone does the adrenal glands produce?

What part of the body makes the hormone insulin?

What happens if you do not have enough growth hormones?

The sex hormones

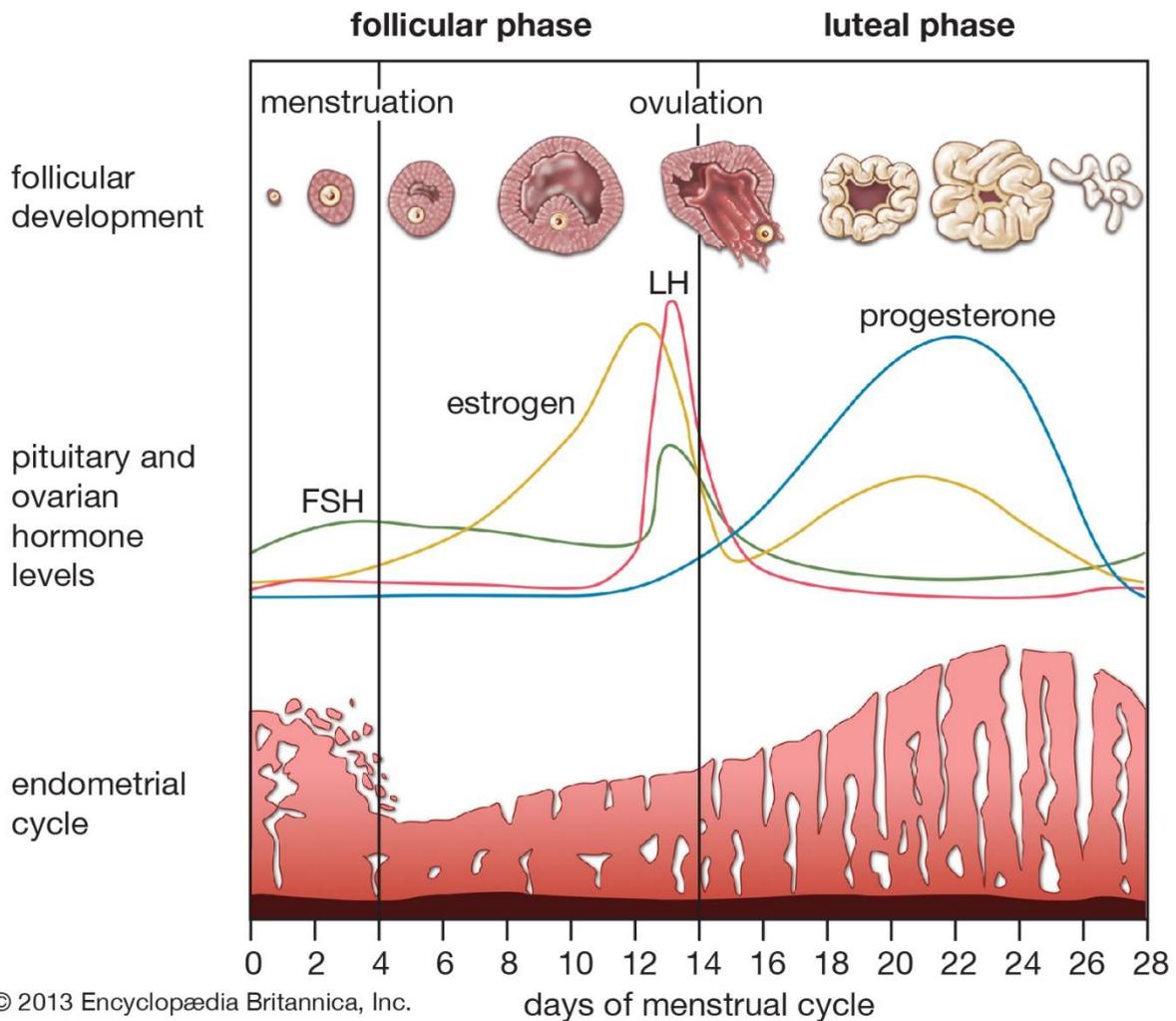
Puberty is the time when our sex organs begin to start developing. In boys the testicles start to produce sperm. In girls, the ovaries start to release eggs. These changes are controlled by hormones released from the brain. Hormones also make other changes happen in our bodies. These mean men tend to be taller, have more hair on their body and face and develop deeper voices than women. Women develop breasts during puberty.



[Puberty: The Hormones Involved | Physiology | Biology | FuseSchool - YouTube](#)

The sex cycle Males produce sperm continuously throughout their adult life. Females tend to produce one egg a month. If the egg is fertilised, then it will develop into a baby inside the body. Hormones control the release of an egg and they make the lining of the uterus develop. The uterus is the space where the baby will develop. If the egg is fertilised by a sperm, it will sink into the wall of the uterus and grow. This baby will be born about 9 months later. If the egg is not fertilised, it is passed out of the body with the lining of the uterus and some blood. This is known as a period or menstruation.

The menstrual cycle



[Your Menstrual Cycle & Periods in 3 Minutes - YouTube](#)

Controlling fertility The contraceptive pill is the commonest medicine in the world. Millions of doses are produced every year. It contains female hormones that fool the body into thinking it is pregnant. This hormone stops the ovaries from making and releasing an egg. It gives women more control over when they have children. If they stop taking the pill, they can usually become pregnant normally afterwards. Some hormones encourage the body to produce eggs. Doctors prescribe these drugs in carefully measured doses. Some of the early fertility treatments led to women

producing too many eggs. Twins and triplets were common! Sometimes men are given male hormone treatments to encourage sperm production.

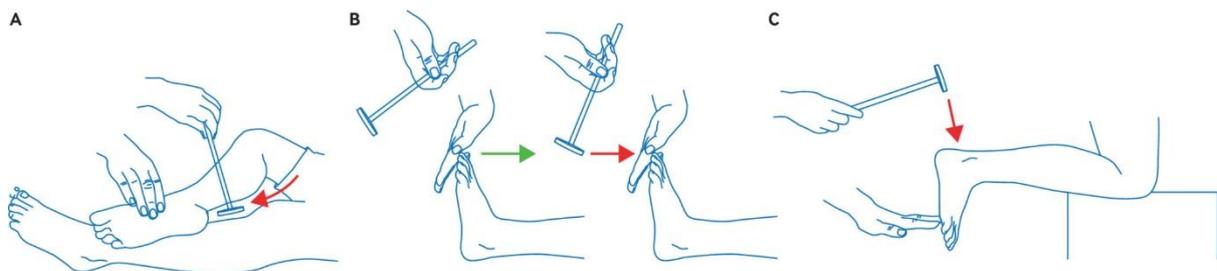
What are the advantages of being able to control fertility?

Give one possible problem if people control their fertility with drugs.

Reflexes

Hormones like adrenalin take a few seconds to work. When the body is in immediate danger, it needs a faster response. When you pick up a hot object you drop it very quickly. Before you realise you have been burnt! This is an example of a reflex.

Reflexes are very, very fast reactions that protect the body. We do not need to learn reflexes. We are born with them. A video game champion will react much more quickly than a beginner. These reactions are learnt. Sometimes people call these very fast reactions reflexes.



Lightning speed Carry out an investigation to see how well two people can do something very quickly. Perhaps they could catch a ball or get through a video game level. Do these sorts of very fast reaction improve with practice?



You can email your completed work to me via homelearning@ifield.kent.sch.uk so that I can mark your work and support you. I am very happy to answer any questions or just let me know how you are getting along.

Keep safe and well

Mrs Hargood 😊