



SICKLE CELL TRAIT: THE FACTS

WHAT IS SICKLE CELL TRAIT?

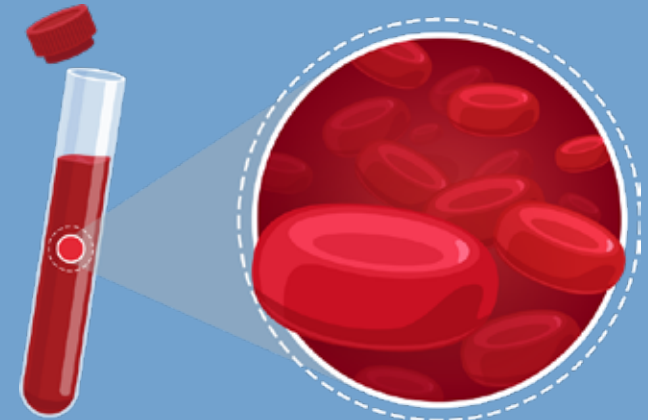
Sickle cell is a disorder of the haemoglobin in red blood cells. Haemoglobin is an important substance that carries oxygen around the body. If you are a sickle cell 'carrier', it means you carry one of the genes that causes sickle cell disease. As a carrier, you cannot develop sickle cell disease because you have one gene that makes the usual haemoglobin. Being a carrier is also known as having Sickle Cell Trait (SCT).

You can find out if you have SCT by having a simple blood test. In some countries (including the UK since 2006), this is done at birth. A person can be tested at any point during their lifetime to see if they have SCT.

The sickle cell gene has survived as a natural way for the body to fight malaria. SCT is most common in those with African and Caribbean family origins, but is also more frequent in people with Mediterranean, Middle-Eastern and Indian heritage. People with SCT do better when infected with malaria than people who do not have SCT; in other words, it is an advantage in those parts of the world to have SCT.



DO I NEED TO BE TESTED?



If you are concerned about SCT and are uncertain whether you may have it, you can ask for an appointment at your medical centre to discuss it further and consider your own individual risk and susceptibility. SCT does not require any special medical treatment and will not change into a disease later on in life.

People with SCT usually do not have any symptoms. However, they can have problems concentrating their urine, increasing susceptibility to dehydration. Very rarely, during intense exercise, SCT has been associated with physical distress, collapse and death. Read further for prevention methods.

WHAT IF I'M A CARRIER (SCT)?

As well as the importance of graduated training, there is a risk of having children with sickle cell disease if you have SCT.

However, this can only happen if your partner is also a carrier or has sickle cell disease themselves. Seek advice from your own unit medical officer if this is a concern for you.

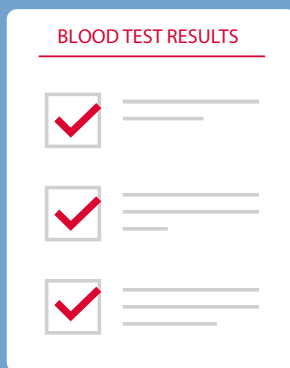
If you're planning to have a child and you know you're a carrier, it's a good idea for your partner to be tested. If both of you are carriers and you're planning to have a baby, discuss with your GP who will refer you to a specialist to discuss the potential risks and what your options are.



THE SCT TEST

You may be offered a blood test to check if you have SCT either immediately or at a later date in training or service.

This blood test is able to check for a number of genetic conditions, but only the presence of SCT will be reported.



WILL IT AFFECT MY CAREER?

SCT does not currently stop you entering the Royal Air Force and will not affect your ability to complete training. If you have SCT most personnel will remain fully deployable (MFD) and have a flag on your medical grade known as an E2 marker.

The reason for the test is to ensure that Royal Air Force personnel are looked after and to minimise any potential injury caused by SCT. A positive test before entry may lead to your participation in a graduated physical training programme; physical conditioning of this nature can reduce your risk of exertional collapse associated with SCT (ECAST).

SCT should not impact your future Royal Air Force career, but certain specialist career pathways and activities must be considered on an individual basis in the pre-course medical, such as high-altitude mountaineering, Diving, Aviation and Special Forces.

Retaining a good level of physical fitness throughout your career will reduce your risk of any problems. You should speak to your PTI for a reconditioning programme should you have any prolonged periods of inactivity where you decondition (such as through injury or illness).

Graduated training and awareness of hydration and heat will help you to optimise your training in general and will help to prevent injury from wider causes.

WHAT IS ECAST? HOW WILL I KNOW I HAVE IT?

ECAST is Exertional collapse associated with SCT. It is very rare and usually only occurs during intense or unaccustomed exercise.

ECAST SYMPTOMS:

Key symptoms are:

Excessive muscle pain and weakness (weakness is the main symptom).

Early symptoms:

- Weakness
- Excessive muscle pain
- Falling behind

Later symptoms:

- Progressively unsteady on your feet
- Slowly collapsing

Additional symptoms of ECAST can include abdominal pain, chest tightness and difficulty breathing.

Having these symptoms does not mean you have ECAST, but if you have SCT and develop these symptoms you should immediately stop activity and seek help.

RPE SCALE	RATE OF PERCEIVED EXERTION
10	MAX EFFORT ACTIVITY Feels almost impossible to keep going. Completely out of breath, unable to talk. Cannot maintain for more than a very short time.
9	VERY HARD ACTIVITY Very difficult to maintain exercise intensity. Can barely breathe and speak only a few words.
7-8	VIGOROUS ACTIVITY Borderline uncomfortable. Short of breath, can speak a sentence.
4-6	MODERATE ACTIVITY Breathing heavily, can hold a short conversation. Still somewhat comfortable, but becoming noticeably more challenging.
2-3	LIGHT ACTIVITY Feels like you can maintain for hours. Easy to breathe and carry a conversation.
1	VERY LIGHT ACTIVITY Hardly any exertion, but more than sleeping, watching TV, etc.

PREVENTION:

ECAST is associated with intense physical activity at a level to which the individual is not accustomed.

The following precautions can help prevent ECAST. The Royal Air Force has introduced a system of training to reduce all causes of collapse for all personnel.

Individual Factors:

- Stay well hydrated (SCT may increase the likelihood of dehydration)
- Avoid training if you are currently, or very recently, unwell
- Maintain your physical fitness
- If you have asthma, maintain good asthma control (ensure you have a regular asthma review at your medical centre)

Environmental/External Factors:

- Avoid exercise at altitude
- Avoid exercise in the heat or high humidity
- Seek advice about prescribed medications from your medical centre or pharmacy
- Avoid dietary supplements containing caffeine or stimulants, including energy shots or drinks

Conducting physical training below maximal effort helps reduce the chance of ECAST; use of the self-rating scale below and maintaining physical activity within an RPE of 8 or below is desirable. Gradually build up training intensity over 4-weeks prior to best-effort fitness tests. If exercising at altitude or in unaccustomed heat ensure you acclimatise to the conditions over 2-4 weeks.

Any period of illness or injury may lead to deconditioning; seek advice from your unit PT staff to build up your fitness before best-effort testing.

Before going diving or to increased altitude you should seek medical advice.

DO NOT ignore the signs & symptoms of ECAST – STOP immediately and seek help!