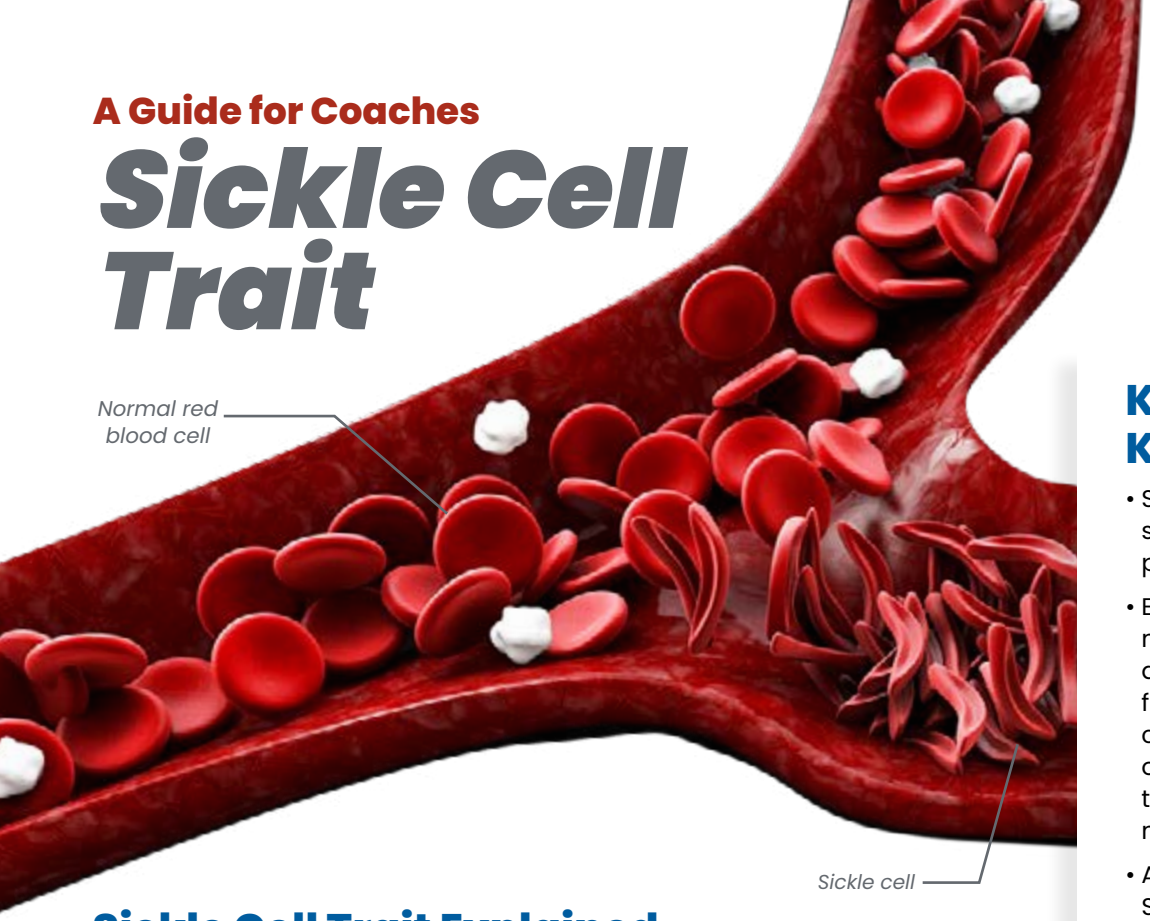
A Guide for Coaches

Sickle Cell Trait



Sickle Cell Trait Explained

Sickle cell trait is inherited: one sickle hemoglobin gene and one normal hemoglobin gene. It is not a disease and cannot turn into sickle cell disease.

- Intense exercise can change red blood cells with sickle hemoglobin from round cells into quarter-moon, or "sickle," shapes.
- During intense exercise, sickled red cells may build up in the bloodstream, blocking normal blood flow to tissues and muscles.
- Athletes with sickle cell trait have suffered severe physical distress, collapse and even death during intense exercise.
- Heat, dehydration, altitude and asthma can raise the risk and severity of sickle cell trait complications, even without intense exercise.
- Knowing an athlete's sickle cell trait status opens the way to education and simple precautions that may prevent collapse and help the athlete succeed in sport.



Know the Key Facts

- Sickle cell trait should not bar student-athletes from taking part in sports.
- Every NCAA student-athlete must give their school documented results from an earlier sickle cell solubility test or be tested during their preparticipation medical exam.
- All newborns in the United States and many other countries are tested for sickle cell at birth.
- Sickle cell trait complications can occur beyond football, in any sport with intense exercise, including long training runs or sprints.
- Unlike heat or heart conditions, athletes with sickle cell trait may seem tired and often can talk, yet have ischemic muscle pain and weakness. Making them continue for "toughness" or discipline can cause a fatal collapse.



The Coaching Staff's Role

Head coaches and their staff should know that sudden deaths in athletes with sickle cell trait have occurred only in conditioning sessions, rather than games or skills practice. The exact cause of collapse remains unknown. One theory is that exercise intensity, rather than the condition itself, is the main factor in sudden collapse. Coaches should use sport-specific conditioning grounded in sound science and be ready to act when student-athletes show distress. Symptoms can begin after just one to three minutes of sprinting or any other sustained, all-out effort, rapidly raising the risk of complications. These problems often develop when an already compromised athlete is pushed beyond their physiological limits.

Create conditions that support these precautions. In general, student-athletes with sickle cell trait should:

- Increase training intensity gradually.
- Schedule fitness testing later in the training program. Follow a progressive, periodized plan and assess performance after athletes have adapted to the demands they will face.
- Be free to choose their own conditioning pace.
- Follow a gradual preseason conditioning plan that prepares them for the demands of their sport.
- Get enough rest and recovery between repetitions, especially during "gassers" and intense station or "mat" drills.
- Have performance-test options other than repeated sprints or timed miles, particularly when those activities are not specific to their sport.
- Stop at once if struggling or if symptoms develop, such as muscle pain, unusual weakness, excessive fatigue or breathlessness.
- Keep well hydrated, particularly in hot and humid conditions.
- Avoid high-caffeine energy drinks, supplements and other stimulants that may contribute to dehydration.
- Keep asthma properly managed.
- Avoid extreme exercise during an acute illness, when feeling unwell or while they have a fever.
- Take care when adapting to altitude changes, even a rise of just 2,000 feet. Adjust training and keep supplemental oxygen available.
- Get medical care promptly for unusual physical distress.

Put Student-Athlete Well-Being First

A planned emergency response and rapid access to medical care are essential when an athlete collapses or is in distress. Knowing a student-athlete's sickle cell trait status should help ensure prompt, appropriate care in an emergency. Institutions should keep an emergency action plan that all athletics personnel review and rehearse at least once a year. Every coach and all strength and conditioning staff should hold first aid and CPR certification.



For further details and resources, see **ncaa.org/health-safety**.

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