Name of Policy	Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy
Policy Number	00093165
Date Last Reviewed	December 2022
Date of Next Review	January 2024
Responsible for Review	Director of Sports Medicine

I. Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy

A. Definitions

The definitions below shall have their respective meanings ascribed.

1. "Campus Health Services" or "CHS" shall mean the University's Campus Health Services unit.

2. "Department of Athletics" shall mean the Department of Athletics of the University.

3. "Department of Sports Medicine" shall mean the Department of Sports Medicine within Campus Health Services.

4. "Policy" shall mean this Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy.

5. "Sickle Cell Disease" shall mean a medical issue in which a mutation in hemoglobin affects the shape of red blood cells and alters some such cells from a rounded to a sickle shape.

6. "Sickle Cell Trait" shall mean a benign carrier condition where one gene carries the sickle hemoglobin mutation and the other gene is normal.

7. "UNC" or "University" shall mean the University of North Carolina at Chapel Hill.

B. Overview

1. As required by the National Collegiate Athletic Association, this Policy is intended to provide protocols to help determine UNC student-athletes who have Sickle Cell Trait. It also sets forth subsequent measures to be taken in the event a UNC student-athlete is determined to have Sickle Cell Trait.

2. Individuals with Sickle Cell Trait have only one anomalous gene from one of their parents and usually have normal red blood cells. When individuals with Sickle Cell Trait are involved in intense exertion or extreme conditions, the shape of their red blood cells can change to a "sickle shape." This change, known as "sickling," can pose a grave risk, as the cells can cause a blockage of blood vessels. These blockages can result in damage to organs and muscle, causing rhabdomyolysis. Exertional sickling is a medical emergency that can lead to various medical issues, collapse and, in some cases, death.

3. Sickling can begin within two to three minutes of any intense exertion. Heat, dehydration, altitude, and asthma can increase the risk of sickling, even when exercise is not intense, and can also make an occurrence of sickling more severe.

C. Education

The Director of Sports Medicine or other appropriate Department of Sports Medicine staff member shall annually discuss with UNC Head Coaches basic information related to Sickle Cell Trait and management of student-athletes who have tested positive for Sickle Cell Trait. Additionally, the Director of Sports Medicine should instruct coaches to promptly refer to Department of Sports Medicine staff any health concerns about any student-athlete who has tested positive for Sickle Cell Trait.

D. Testing

1. Each UNC varsity student-athlete must be tested for Sickle Cell Trait before participation in any athletic activity as a student-athlete at the University. Current UNC students trying out for a varsity team or practicing with a varsity team must also be tested. Such individuals who are trying out for a varsity team shall be responsible for payment for their own test.

    a. Notwithstanding the foregoing, a student-athlete or individual trying out for a UNC varsity team may submit previous test results as evidence of whether or not they have Sickle Cell Trait. If able to provide results of previous Sickle Cell Trait testing deemed adequate by the Director of Sports Medicine, such an individual may not need to undergo additional diagnostic testing.

2. Individuals being tested for Sickle Cell Trait should report to CHS no later than 48 hours prior to participation in their first athletic activity as a UNC student-athlete. Initial testing is usually conducted using a rapid screen. If the screen produces a positive result, such test will typically be verified with hemoglobin electrophoresis. A positive test result does not automatically disqualify an individual from athletic participation.

E. Protocol in the Event of a Student-Athlete Testing Positive for Sickle Cell Trait

1. Communication to Appropriate University Personnel

    a. When a student-athlete tests positive for Sickle Cell Trait, a written notification shall be communicated by the Team Physician for the student-athlete's varsity sport program to:

        i. The Athletic Trainers for the student-athlete's varsity sport program;

        ii. The Director of Sports Medicine; and

        iii. The Associate Director(s) of Sports Medicine.

    b. The Head Athletic Trainer for the student-athlete's varsity sport program shall then communicate the positive result of the Sickle Cell Trait test to other appropriate personnel including, but not necessarily limited to:

        i. The coaching staff of the student-athlete's varsity sport program, including the Head Coach, each appropriate Assistant Coach, each appropriate Graduate Assistant Coach, each appropriate Volunteer Coach, and each appropriate Strength and Conditioning coach;

        ii. Graduate Assistant Athletic Trainers for the student-athlete's varsity sport program; and

        iii. The Department of Athletics Compliance Office.

    c. The communication referenced above in this Section shall occur at the time of the diagnosis and annually thereafter for the duration of the time during which an applicable individual is an enrolled student-athlete at the University.

2. Communication to Individuals Outside of the University

a. If a student-athlete who tests positive for Sickle Cell Trait is under the age of 18, the Team Physician for the student-athlete's varsity sport program shall call the parent(s) or guardian(s) of the student-athlete to discuss the condition and this Policy. Such parent(s) or guardian(s) of the student-athlete must then sign the Voluntary Assumption of Sickle Cell-Related Risks form (attached to this Policy as Appendix A) to acknowledge that this Policy was explained, all questions were answered, and all Sickle Cell-related risks associated with continued participation as a varsity student-athlete at UNC are assumed.

b. If a student-athlete who tests positive for Sickle Cell Trait is over the age of 18, he or she must sign the Voluntary Assumption of Sickle Cell-Related Risks form (attached to this Policy as Appendix A) to acknowledge that this Policy was explained, all questions were answered, and all Sickle Cell-related risks associated with continued participation as a varsity student-athlete at UNC are assumed. The Team Physician for the student-athlete's varsity sport program will highly recommend to the student-athlete that such student-athlete permit the Team Physician to communicate with the student-athlete's parent(s) or guardian(s) regarding the condition and this Policy.

i. If a student-athlete is unwilling to provide consent for his or her varsity sport program's Team Physician to discuss his or her positive Sickle Cell Trait test with such student-athlete's parent(s) or guardian(s), such student-athlete shall be required to acknowledge such refusal of consent in writing using the Positive Sickle Cell Trait Test Acknowledgement form (attached to this Policy as Appendix B).

ii. If a student-athlete is willing to provide consent for his or her varsity sport program's Team Physician to discuss his or her positive Sickle Cell Trait test with such student-athlete's parent(s) or guardian(s), such student-athlete should provide consent in writing using the Positive Sickle Cell Trait Test Acknowledgement form (attached to this Policy as Appendix B).

3. Waivers to Participate

No UNC student who has tested positive for Sickle Cell Trait at any time shall be permitted to participate in any activity of a UNC varsity sport program without completing and submitting to the Department of Sports Medicine the Voluntary Assumption of Sickle Cell-Related Risks form (attached to this Policy as Appendix A).

F. Guidelines for Participation in Athletic Activities for Student-Athletes who have Tested Positive for Sickle Cell Trait

1. Each student-athlete who has tested positive for Sickle Cell Trait shall meet with the Team Physician and Head Athletic Trainer for his or her varsity sport program to discuss and document sport-specific matters related to management of such student-athlete's participation in practices, competitions, and other athletic activities.

a. Determinations made by such individuals about these matters shall be communicated by the applicable Team Physician or Head Athletic Trainer to the coaching staff of the student-athlete's varsity sport program.

b. The Team Physician or Head Athletic Trainer for the student-athlete's varsity sport program shall also provide sport-specific management guidelines to the coaching staff and Strength and Conditioning staff for the student-athlete's varsity sport program.

c. The Team Physician and other appropriate members of the Department of Sports Medicine staff should then work with the coaching staff for such student-athlete's varsity sport program to determine appropriate levels of individual progression and physical activity for such student-athlete.

2. Each student-athlete who has tested positive for Sickle Cell Trait shall be managed, limited when necessary, and monitored as appropriate by Department of Sports Medicine staff during participation in varsity sport program athletic activities:

a. In very hot or humid conditions;

b. When such student-athlete is exercising at an altitude to which they are unaccustomed;

c. After any illness, especially an illness involving nausea, vomiting, diarrhea, or other symptom(s) affecting hydration levels;

d. If such student-athlete has an asthmatic condition or is experiencing asthmatic symptoms;

e. If atmospheric conditions present increased challenges for respiration; and

f. After sleep loss.

3. Each student-athlete who has tested positive for Sickle Cell Trait should acclimate to the onset of conditioning or weightlifting programs by modifying his or her exercise programs as appropriate (in consultation with Department of Sports Medicine staff as necessary) over a period of one to two weeks. Additional accommodations should be made in the event of any of the conditions referenced above in this Section.

4. When a student-athlete has tested positive for Sickle Cell Trait and is unaccustomed to the existing altitude or climate conditions, his or her training level should decrease as determined to be appropriate by a Department of Sports Medicine staff member. Department of Sports Medicine staff shall ensure an oxygen tank is readily available during all conditioning sessions, practices, and games in which the student-athlete will participate.

5. Each student-athlete who has tested positive for Sickle Cell Trait shall refrain from sustained exertion without adequate rest time.

a. Such student-athletes who participate in sports which require high-speed sprints, interval training, or other activities which induce high levels of lactic acid shall be allowed extended recovery between repetitions.

6. Student-athletes who have tested positive for Sickle Cell Trait should not be required to meet performance standards in timed conditioning tests. Notwithstanding the foregoing, any such student-athlete may participate in such conditioning activities without having to meet time requirements.

7. The NCAA advises that physical activity should never be used for punitive punishment, and endorses that exercise as punishment invariably abandons sound physiologic

principles and elevates risk above any reasonable performance reward in all athletes. This is especially true for student-athletes who have tested positive for Sickle Cell Trait. In the event that punitive conditioning continues to be used in any training or conditioning session at the University, any student-athlete with Sickle Cell Trait shall not be required to participate in punitive conditioning drills.

G. Management of Symptoms

The provisions of this Section shall serve as a basic guide to management of symptoms of any student-athlete with Sickle Cell Trait. These provisions may be adjusted or supplemented as deemed appropriate in the professional judgement of Department of Sports Medicine staff.

1. Any student-athlete who has tested positive for Sickle Cell Trait shall immediately report any symptoms associated therewith to the Head Athletic Trainer for his or her varsity sport program or other appropriate Department of Sports Medicine staff member. Such symptoms may include, but are not limited to:

   a. Cramping;

   b. Muscle Pain;

   c. Swelling;

   d. Tenderness;

   e. Fatigue;

   f. Shortness of breath; and

   g. Abdominal pain.

   Upon the occurrence of any such symptoms which are unordinary for the applicable student-athlete, such student-athlete shall discontinue exertional activity. If such symptoms are believed by Department of Sports Medicine staff or the student-athlete to be due to exertional sickling, there shall be a low threshold for removal from the physical activity. A member of the Department of Sports Medicine staff shall have the right to remove any student-athlete from any activity of a UNC varsity sport program at any time in the event of a concern of possible exertional sickling.

2. When notified of any symptoms associated with exertional sickling by a student-athlete who has tested positive for Sickle Cell Trait, the Head Athletic Trainer or other appropriate Department of Sports Medicine staff member shall immediately:

   a. Check the student-athlete's vital signs;

   b. Help cool the student-athlete's body temperature (if appropriate);

   c. Help rehydrate the student-athlete as appropriate and as can be tolerated by the student-athlete;

   d. Administer high-flow oxygen if such means are available, preferably with a non-rebreather face mask;

   e. Activate the appropriate Emergency Action Plan if the student-athlete exhibits any signs or symptoms of decreased mental capacity or unstable vital signs; and

f. Communicate the student-athlete's status to other appropriate physicians and medical personnel so that such information may be included in any subsequent evaluation and treatment plan for the student-athlete.

H. Return to Participation in Athletic Activities

After exhibiting signs or symptoms of exertional sickling, a student-athlete who has tested positive for Sickle Cell Trait may only return to participation in athletic activities with his or her varsity sport program after he or she has been cleared to do so by the Team Physician for his or her varsity sport program. It is advisable for a gradual return to participation in such activities to be determined and followed, with Department of Sports Medicine staff closely monitoring the student-athlete throughout the process.

Appendix A

Voluntary Assumption of Sickle Cell-Related Risks

I, the undersigned, have been informed by a representative of the Department of Sports Medicine in the University of North Carolina's Campus Health Services division that I have Sickle Cell Trait. I have reviewed the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy with a representative of the Department of Sports Medicine, and my questions regarding Sickle Cell Trait and the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy have been answered.

I hereby attest that I have read and understand the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy. I understand and agree to abide by all provisions and requirements therein, including immediately notifying appropriate Department of Sports Medicine staff upon the occurrence of any symptom or sign associated with Sickle Cell Trait.

I hereby acknowledge that I have been informed of and understand the risks inherent with my participation in athletic activities when having the Sickle Cell Trait. I understand and acknowledge that such risks may include serious physical injury, mental injury, and death. My signature below attests to my voluntary assumption of these risks in my participation as a student-athlete at the University of North Carolina at Chapel Hill.

In addition, I hereby release, hold harmless, and forever discharge the University, including its trustees, officers, employees and agents, from any and all liability, claims, demands, actions, and causes of action whatsoever arising out of or related to any personal injury, including death, in any way related to Sickle Cell Trait that I may sustain by participating in athletic activities.

Name: _____

UNC Varsity Athletic Program(s): _____

Department of Sports Medicine and/or Campus Health Services Representative who Reviewed My Sickle Cell Trait Status and the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy with Me:

_____

Date of Above Referenced Review: _____

Signature: _____ **Date:** _____

This form shall be completed by the appropriate parent or guardian of a student-athlete under the age of 18.

Appendix B

Positive Sickle Cell Trait Test Acknowledgement

I, the undersigned, have been informed by a representative of the Department of Sports Medicine in the University of North Carolina's Campus Health Services division that I have Sickle Cell Trait. I have reviewed the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy with a representative of the Department of Sports Medicine, and my questions regarding Sickle Cell Trait and the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy have been answered.

My signature below acknowledges my consent for information about my Sickle Cell Trait status to be disclosed to the individual(s) identified below.

Name: _____

UNC Varsity Athletic Program(s): _____

Department of Sports Medicine and/or Campus Health Services Representative who Reviewed My Sickle Cell Trait Status and the Department of Athletics and Department of Sports Medicine Sickle Cell Trait Policy with Me:

_____

Date of Above Referenced Review: _____

Individual(s) to whom I Give the Department of Sports Medicine and Campus Health Services Consent to Disclose Confidential Information about My Sickle Cell Trait Status:

_____

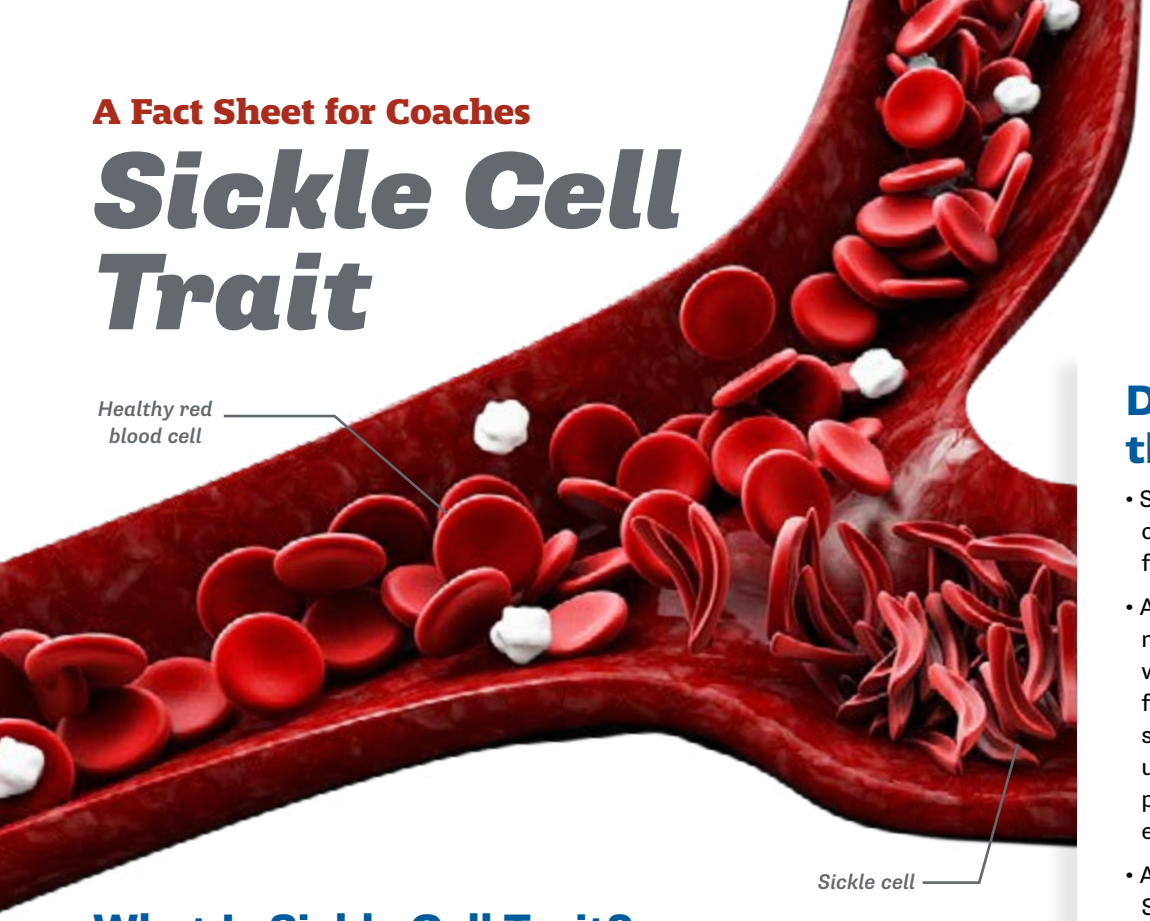
OR

_____ **I decline to give consent to the Department of Sports Medicine and Campus Health Services to disclose confidential information about my Sickle Cell Trait status. I acknowledge that my decision to decline consent may withhold important information from University and other personnel who have a significant role in my athletic activities. I accept all risks and consequences, including serious physical injury or death, related to my decision to decline consent.**

Signature: _____ **Date:** _____

A Fact Sheet for Coaches

Sickle Cell Trait



What Is Sickle Cell Trait?

Sickle cell trait is not a disease. Sickle cell trait is the inheritance of one gene for sickle hemoglobin and one for normal hemoglobin. Sickle cell trait will not turn into the disease.

- During intense exercise, red blood cells containing sickle hemoglobin can change shape from round to quarter-moon, or "sickle."
- Sickle red cells may accumulate in the bloodstream during intense exercise, blocking normal blood flow to the tissues and muscles.
- During intense exercise, athletes with sickle cell trait have experienced significant physical distress, collapsed and even died.
- Heat, dehydration, altitude and asthma can increase the risk for and worsen complications associated with sickle cell trait, even when exercise is not intense.
- Knowledge of sickle cell trait status can be a gateway to education and simple precautions that may prevent collapse among athletes with sickle cell trait, allowing them to thrive in sport.

Do You Know the Facts?

- Student-athletes with sickle cell trait should not be excluded from athletics participation.
- All NCAA student-athletes must provide their school with documented results from a previous sickle cell solubility test or they must undergo testing during their preparticipation medical examination.
- All newborns in the United States (and many other countries) undergo sickle cell testing at birth.
- Complications associated with sickle cell trait are not limited to football and can happen in any sport that includes intense exercise (e.g., long training runs or sprints).
- Unlike heat-related or cardiac conditions, athletes with sickle cell trait may present as being fatigued and can often talk, but may be experiencing ischemic pain and weakness in their muscles. Pushing the athlete to continue beyond this point for "toughness" or discipline can lead to a fatal collapse.

The Role of the Coaching Staff

An important note to head coaches and their staff is that the incidents of sudden death in athletes with sickle cell trait have been exclusive to conditioning sessions rather than game or skill practice situations. While the definite cause of collapse among sickle cell trait athletes is not yet known, one hypothesis about what may be happening is that exercise intensity is a leading factor for sudden collapse, rather than the medical condition itself. Coaches should conduct appropriate sport-specific conditioning based on sound scientific principles and be ready to intervene when student-athletes show signs of distress. Student-athletes can begin to experience symptoms after only one to three minutes of sprinting, or in any other full exertion of sustained effort, thus quickly increasing the risk of complications. Many times, these complications occur when athletes are being pushed beyond their physiological limit while in an already compromised position.

Provide an environment in which the following precautions can be activated. In general, student-athletes with sickle cell trait should:

- Slowly build up their intensity while training.
- Have their fitness tests scheduled later in the training program. Use a progressive, periodized program and evaluate their performance once they are acclimated to the stress about to be placed upon them.
- Be allowed to set their own pace while conditioning.
- Implement a slow and gradual preseason conditioning regimen that prepares them for the rigors of the sport.
- Be provided adequate rest and recovery between repetitions, especially during "gassers" and intense station or "mat" drills.
- Be given alternatives for performance testing, rather than serial sprints or timed mile runs, especially if these activities are not specific to the sport.
- Stop activity immediately upon struggling or experiencing symptoms such as muscle pain, abnormal weakness, undue fatigue or breathlessness.
- Stay well hydrated at all times, especially in hot and humid conditions.
- Refrain from consuming high-caffeine energy drinks and supplements, or other stimulants, as they may contribute to dehydration.
- Maintain proper asthma management.
- Refrain from extreme exercise during acute illness, if feeling ill, or while experiencing a fever.
- Beware when adjusting to a change in altitude, e.g., a rise in altitude of as little as 2,000 feet. Modify training and have supplemental oxygen available.
- Seek prompt medical care when experiencing unusual physical distress.

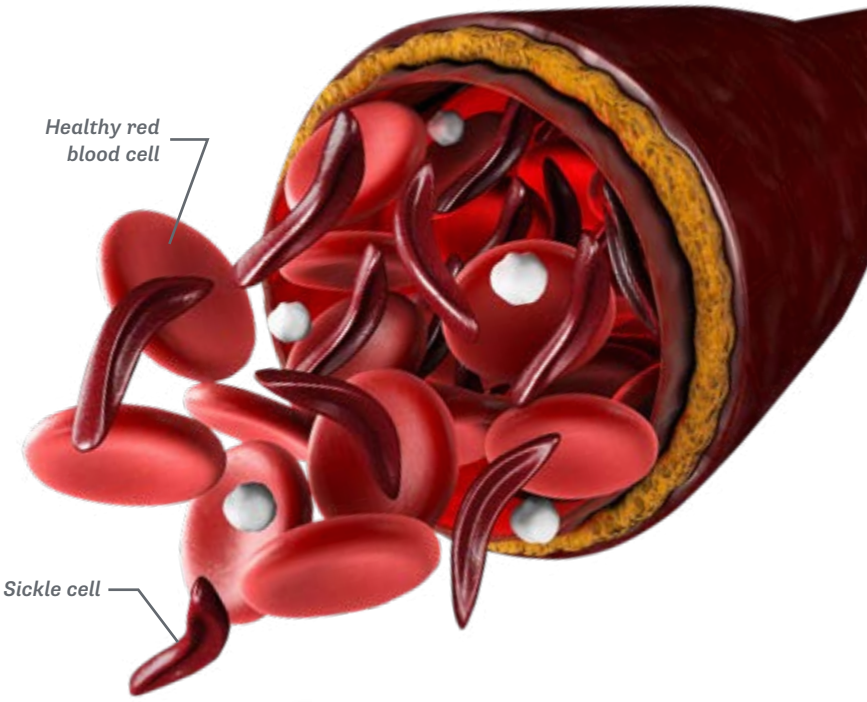
Ensure Student-Athlete Well-Being Comes First

Planned emergency response and prompt access to medical care are critical components to ensure adequate response to an athlete who collapses or is in distress. Knowledge of a student-athlete's sickle cell trait status should facilitate prompt and appropriate medical care during a medical emergency. Institutions should have an emergency action plan in place that is reviewed and rehearsed at least annually with all athletics personnel. All coaches and the strength and conditioning staff should be certified in first aid and CPR.

For more information and resources, visit **ncaa.org/health-safety**.

A Fact Sheet for Student-Athletes

Sickle Cell Trait



What Is Sickle Cell Trait?

Sickle cell trait is not a disease. Sickle cell trait is the inheritance of one gene for sickle hemoglobin and one for normal hemoglobin. Sickle cell trait will not turn into the disease. Sickle cell trait is a life-long condition that will not change over time.

- During intense exercise, red blood cells containing the sickle hemoglobin can change shape from round to quarter-moon, or "sickle."
- Sickled red cells may accumulate in the blood stream during intense exercise, blocking normal blood flow to the tissues and muscles.
- During intense exercise, athletes with sickle cell trait have experienced significant physical distress, collapsed and even died.
- Heat, dehydration, altitude and asthma can increase the risk for and worsen complications associated with sickle cell trait, even when exercise is not intense.
- Athletes with sickle cell trait should not be excluded from participation as precautions can be put into place.

How Can I Prevent a Collapse?

- Know your sickle cell trait status.
- Engage in a slow and gradual preseason conditioning regimen.
- Build up your intensity slowly while training.
- Set your own pace. Use adequate rest and recovery between repetitions, especially during "gassers" and intense station or "mat" drills.
- Avoid pushing with all-out exertion longer than two to three minutes without a rest interval or a breather.
- If you experience symptoms such as muscle pain, abnormal weakness, undue fatigue or breathlessness, stop the activity immediately and notify your athletic trainer and/or coach.
- Stay well hydrated at all times, especially in hot and humid conditions.
- Avoid using high-caffeine energy drinks or supplements, or other stimulants, as they may contribute to dehydration.
- Maintain proper asthma management.
- Refrain from extreme exercise during acute illness, if feeling ill, or while experiencing a fever.
- Beware when adjusting to a change in altitude, e.g., a rise in altitude of as little as 2,000 feet. Modify your training and request that supplemental oxygen be available to you.
- Seek prompt medical care when experiencing unusual physical distress.

For more information and resources, visit ncaa.org/health-safety.

Do You Know If You Have Sickle Cell Trait?

People at high risk for having sickle cell trait are those whose ancestors come from Africa, South or Central America, India, Saudi Arabia and Caribbean and Mediterranean countries.

- Sickle cell trait occurs in about 8% of the U.S. African American population, and between one in 2,000 and one in 10,000 in the Caucasian population.
- All NCAA student-athletes must provide their school with documented results from a previous sickle cell solubility test, or they must undergo testing during their preparticipation medical examination.
- Knowledge of sickle cell trait status can be a gateway to education and simple precautions that may prevent collapse among athletes with sickle cell trait, allowing you to thrive in your sport.
- All newborns in the United States (and newborns in many other countries) undergo sickle cell testing at birth.

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