LEXINGTON CHRISTIAN ACADEMY
SPORTS MEDICINE HANDBOOK
FOR
PARENTS & STUDENT-ATHLETES

Contents

Lexington Christian Academy Sports Medicine

A Note from the Head Athletic Trainer

Each year millions of students across the United States participate in interscholastic athletic competition and each year tens of thousands of them suffer an injury that prevents them from participating in practices and/or athletic contests for their school. While athletic healthcare is commonplace in professional and collegiate athletics, most high school student-athletes across the nation are still not afforded even the most rudimentary of athletic healthcare services.

Lexington Christian Academy has made a moral and financial commitment to the student-athletes of LCA by providing for the establishment of the LCA Sports Medicine Program. Since 2000, the sports medicine program has grown into a program of excellence, combining quality medical care from numerous local physicians and therapists.

The LCA Sports Medicine program consists of nationally-certified and state-licensed athletic trainers, student athletic trainer(s), 3+ affiliated team physicians and numerous team therapists. In addition, the program maintains affiliations with local EMS and many local allied health care providers and specialists.

What is Athletic Training?

Athletic trainers are highly educated and skilled allied health care professionals specializing in athletic health care. In cooperation with physicians and other allied health care providers, athletic trainers function as integral members of the athletic health care team within the school setting. Athletic Trainers are required by their national certifying body (NATA Board of Certification) and the state of Kentucky to maintain their skills through Continuing Educations Requirements or they lose their authority to practice.

Athletic Trainers in Kentucky are certified through the National Athletic Trainers' Association Board of Certification and licensed by the Kentucky Board of Medical Licensure. These bodies require that individuals take extensive written and oral examinations testing their skills in five domains of athletic training after completing a university course of studies leading to a Master's Degree.

All Athletic Trainers are expected to be competent in the following:

- Risk management and injury prevention
- Pathology of injuries and illnesses
- Assessment and evaluation
- Acute care of injury and illness
- Pharmacology
- Therapeutic modalities
- Therapeutic exercise
- General medical conditions and disabilities
- Nutritional aspects of injury and illness
- Psychosocial intervention and referral
- Health care administration
- Professional development and responsibility

The entire LCA Sports Medicine Staff is committed to providing the best possible athletic health care to students participating in athletics at LCA. In addition, we are also committed to reducing the cost of health care to our student-athletes by providing as many services as possible in house in our athletic training room. Since 2000, over a quarter-million dollars in medical services have been provided to LCA student-athletes free of charge.

We are only able to do our job successfully when we have the full cooperation and support of the parents of our student-athletes. We would like to thank you for all that you mean to us, and your level of commitment to your children here at LCA.

In Christ,

Cameron Deckett, MS, ATC
Athletic Trainer

Andrew Carlson, MS, ATC
Athletic Trainer

Lexington Christian Academy Sports Medicine

Athletic Accident Insurance

All injuries need to be reported to the Athletic Trainer and your Head Coach.

The insurance that all student-athletes receive is a secondary coverage. It pays some of the cost that is not covered by the student-athlete's primary insurance provider. The form can be found on the LCA Sports Medicine website: http://www.lcasportsmedicine.weebly.com

Items needed for the claim form are as follows:

1. First and foremost, keep a copy of the secondary insurance form in your records for at least one year.
2. The claim form must be completed in its entirety and signed by both the parents and a school official (coach or athletic trainer).
3. This coverage has a benefit period of 52 weeks from the date of the accident.
4. Parents are responsible for filing this claim. Although certain healthcare offices will file on behalf of the parents, it is the parents' responsibility to mail the original form to the secondary insurance company.
5. Make copies of the completed form for your records. Take a copy with you to any and all appointments pertaining to this injury and submit a copy directly to the athletic trainer at the high school.
6. In addition to the claim form, the company will also require the following in order to make payment:
    a. Itemized physician, hospital, or other provider bill that includes the diagnostic and procedure codes
    b. Explanation of Benefits from primary carrier

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Pre-Participation Physicals

All students who participate in athletics must have a current physical on file with the LCA Sports Medicine Staff. KRS 156.070 (2)(d) states: "Every local board of education shall require an annual medical examination performed and signed by a physician, physician assistant, advanced practice registered nurse, or chiropractor (if performed within the professional's scope of practice), for each student seeking eligibility to participate in any school athletic activity or sport."

Physicals are valid for exactly **13** months, i.e. June 1, 2010 through July 1st, 2011 – this allows families to have their annual physical without issue as many insurance companies only allow one physical per year.

The physical must be obtained prior to participating in any practices, scrimmages, or games. All completed physical forms and associated forms should be submitted to the athletic training room or LCA athletic office.

High School Sports Physical Form - https://khsaa.org/forms/ge04_english-complete0719.pdf
Middle School Sports Physical Form – http://www.khsaa.org/forms/ms01.pdf

Lexington Christian Academy Sports Medicine

Team Medical Release Information

Prior to participating in athletics at Lexington Christian Academy, each student-athlete/parent must complete several forms. The forms include the *pre-participation physical examination, a parental consent form, and a participation waiver form* (both of which accompany the physical form). Each of the forms requests specific information and provides you, the parent, and your child with important information about he risks of participating in athletics.

It is extremely important that you fill the forms out properly and that your child returns them to the Sports Medicine Department before participating in practices, scrimmages, or games. It is these forms which provide us with the names and phone numbers of who to contact in an emergency, any special medical information on your child, and a statement authorizing medical care in the event that you cannot be reached to authorize such care.

Finally, medical release forms from medical offices allow us to send and receive pertinent medical information from other medical providers and insurance companies, which allows us to better serve you should your child become injured and incur medical bills. Federal regulations REQUIRE written authorization for the release of medical information between medical providers, insurance companies, and other related groups and individuals.

Lexington Christian Academy Sports Medicine

In An Event of an Injury

At the School:

Athletic and other injuries which occur at Lexington Christian Academy should be reported to the LCA Sports Medicine staff and the athlete's coach as soon as the athlete realizes they are injured. If the athlete is injured during school hours, they should also report this injury to the appropriate personnel.

The LCA Sports Medicine staff will evaluate the injury and, based upon this evaluation, make a determination as to what is the most appropriate course of treatment for the athlete. In most cases, injuries are minor in nature and the athlete can be successfully treated in the athletic training room at LCA. If the injury is more extensive or will require further medical evaluation by a physician, the athlete's parent/guardian will be contacted by the attending athletic trainer and provided with information concerning the nature of the injury and information on having the injury examined by our physicians.

On the Road:

In some cases, an athletic trainer accompanies our teams when they travel away from LCA. If an athlete is injured while on the road, they should report that injury to the sports medicine staff member if there is one traveling with the team. If there is not an athletic trainer with them, then the athlete should report their injury to their coach.

If the host school employs an athletic trainer, our coaching staff may elect to have the athlete examined by that athletic trainer. They will most likely provide basic care for the injury, and refer the athlete back to our sports medicine staff. Because of travel times and distances of contests from LCA, athletes may need to report the injury to the athletic trainer the following school day. ***It is imperative that they do this***! In case of significant injury, parents will be contacted about the injury directly from that site and consulted about the problem.

Questions from Home:

If you are concerned about an injury that your child suffered during athletics, please call the athletic training room, the head athletic trainer, or the coach. The telephone numbers for the athletic training room and the athletic trainer are located in this booklet. It is always your right as a parent to seek further medical care for your son/daughter if you have any doubt as to the seriousness of their injury. It is strongly recommended, though, that you contact the sports medicine staff at LCA before taking your son/daughter to the physician of your choice. Students at LCA can often be more quickly seen by our Team Physicians and affiliated providers.

Written communication with your doctor is very important for us to appropriately (and legally) treat athletes and return them to safe athletic competition when released by the physician.

> **PLEASE NOTE** – Athletes seen by physicians not affiliated with the LCA Sports Medicine Program will be **REQUIRED** to submit written treatment plans and a written release from their physician in order to return to participation on their team. Without written instructions, we have no way of

confirming whether or not an athlete is actually cleared to participate until such documentation is received.

General and Follow-Up Care:

In order to ensure that athletes recover from their athletic injuries, it is extremely important that they make every effort to come to the athletic training room for daily care and follow-up until the athletic training staff has determined that they have recovered sufficiently and do not require further medical care.

Due to the expansive nature of the athletic program at LCA, we may not always have an opportunity to track your son/daughter down if they fail to report to the training room for initial or follow-up care for an injury. It is strongly encouraged that parents keep checking with their child and even call the training room if they have any doubt as to whether or not their child is doing what they are supposed to be doing in order to successfully recover from their injury.

All treatment plans for athletes seen in the athletic training room are devised and based upon established protocols, physicians' written, oral and/or standing orders, and standard rehabilitation protocols.

Lexington Christian Academy Sports Medicine

Life Threatening Conditions – Policies and Procedures

Medical Emergencies

Traumatic	**Non-Traumatic**
Spine Injury (cervical/thoracic/lumbar)	Seizure
Unconscious student-athlete	Asthma
Concussion Injury	Anaphylaxis/Allergic Conditions
Facial Injury	Diabetic Emergency
Abdominal/Thoracic Trauma	Heat Stroke
Severed Body Part	Hypothermia
Animal Bites	
Burns	
Open or Closed Fracture/Dislocation	
Lightning Strike	
Hyponatremia	

A primary and secondary survey will be performed for all medical emergencies. A primary survey identifies immediate threats to life and will assess airway, breathing, and circulation. A secondary survey identifies non-life threatening injuries, but injures that will need to be evaluated further by medical personnel.

Airway Obstruction, Respiratory Arrest, Cardiac Arrest

1. **Recognition/Management**
   The certified athletic trainer will assess a patient for the presence of life threatening conditions by conducting a primary survey. Examples of life threatening conditions include airway obstruction, respiratory arrest, and cardiac arrest. If the primary survey uncovers a life threatening conditions, the certified athletic trainer, per standing order, will provide basic life support and activate EMS. Basic life support includes obstructed airway, rescue breathing, CPR, and AED application.

   Basic Life Support efforts should continue until one of the following occurs:
   - Victim recovers, regains breathing and pulse.
   - Resuscitation efforts have been transferred to another qualified person.
   - A physician directed person or team assumes responsibility.
   - Victim is transferred to the care of EMS personnel.

2. **Referral** - Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play** - Medical clearance from physician

   *Program Policy: All certified athletic trainers and athletic training students must maintain a current and valid CPR/AED certification.

Hemorrhage

1. **Management**

1. Perform primary and secondary surveys
2. Apply steady, direct pressure over wound
3. Apply pressure bandage and secure
4. Elevate extremity**,** if possible, and if condition allows
5. Apply ice, as indicated
6. If bleeding persists, reinforce dressings. Do not change dressings.
7. If bleeding continues, apply compression at pressure point
8. If unable to stop bleeding and all other management techniques have failed, use a belt for a tourniquet
9. Monitor vital signs
10. Treat for shock
11. Refer

2. **Referral** - Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play** - Medical clearance from physician

Shock

1. **Management**
    1. Maintain airway
    2. Perform CPR and/or ventilations, if indicated
    3. Perform primary and secondary surveys
    4. Control bleeding, if indicated
    5. Try to obtain normal body temperature
    6. Monitor serial vital signs (heart rate, respiratory rate, blood pressure)
    7. Elevate legs if condition allows
    8. Refer

2. **Referral** - Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play** - Medical clearance from physician

Spine Injury (Cervical/Thoracic/Lumbar)

1. **Management**
    1. Perform primary and secondary surveys
    2. Immobilize/stabilize area(s) of concern
    3. Prepare for transport
    4. Maintain airway
    5. Monitor serial vital signs (HR, respiratory rate, BP)
    6. Unconscious Student-Athlete – Perform primary and secondary surveys and assume spinal injury; treat as per spinal injury protocol

2. **Referral -** Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play -** Medical clearance from physician

Catastrophic Exertional Hyponatremia

Individuals who overhydrate with hypotonic solutions can experience exertional hyponatremia, an imbalance between fluid and serum sodium level. This can lead to seizures, coma, and even death.

1. Management

a. Recognition of symptoms

i. Overdrinking, nausea, vomiting, dizziness, muscular twitching, peripheral tingling/swelling, headeache, disorientation, altered mental state, exhaustion, pulmonary edema, seizures, cerebral edema.

   b. Perform primary survey
   c. Active EMS
   d. Provide Basic Life Support if Needed
2. **Referral**- Activate EMS/Division of Sports Medicine Emergency Action Plan
3. **Return to Play**- Medical clearance from physician

Lightning Injuries

Individuals who have been struck by lightning are not dangerous to touch. The current of electricity has already passed through their body, and they do not carry a charge. If an individual has been struck by lightning, it is vital that they receive care immediately, because they may be experiencing cardiac arrest. If it is safe to do so, provide the care where the victim lies. If it is unsafe, the patient should be first moved to a safe location.

1. **Management**
   a. Activate EMS
   b. Perform Primary Survey
   c. Give Basic Life Support If Needed
   d. Perform Secondary Survey
   e. Treat Addition Injuries which may include fractures, burns, shock, and other trauma
2. **Referral-** Activate EMS/Division of Sports Medicine Emergency Action Plan
3. **Return to Play-** Medical clearance from physician

Sickle Cell Emergency

Sickle cell trait is a gene trait in which the red blood cells can be misshapen and create a "logjam" effect in the bloodstream during intense activity. This can lead to collapse, acute rhabdomyolysis, and even death.

Sickle cell test results are required to be on file in Division I, II and III institutions. If the student-athletes have been tested and/or have the results, a copy needs to be on file. In the occurrence of an athlete not being tested for sickle cell, they need to be screened through a simple blood test. If the student-athlete does not want to be screened for the sickle cell trait a sign waiver needs to be completed and on file.

Very few high school athletes have been screened for sickle cell trait. Because of this, they can go undiagnosed, and emergency situations can be caused by this without a diagnosis. It is vital to understand the symptoms of sickle cell trait in case an emergency arises, so emergency action can take place as soon as possible.

1. **Recognition/Management**

   Common Symptoms of a Sickle Cell Emergency

   Chest Pain
   Lethargy
   Difficulty Breathing
   Seizure
   Limb Weakness or Loss of Function
   Stomach Pain/Swelling
   Pain and Prolonged Erection
   Loss of Consciousness

Collapse

1. Check Vital Signs
2. Cool the athlete, if necessary
3. If the athlete is obtunded or as vital signs decline, call EMS
4. Attach an AED

2. **Referral**-Activate EMS/Division of Sports Medicine Emergency Action Plan
   In non-emergent cases, refer to PCP for diagnosis and treatment

3. **Return to Play**- Medical Clearance from a Physician

Emergency Care for Severe Asthma

1. **Recognition**

Asthma is chronic inflammation of the airways leading to bronchospasm. In 50-85% of asthmatics, exercise will exacerbate asthma symptoms. Exercise-induced bronchospasm usually occur during or minutes after vigorous activity, reaches its peak 5-10 minutes after stopping activity, and usually resolves in 20-30 minutes.

Common Symptoms of Asthma are:

Coughing
Wheezing
Chest Tightness
Shortness of Breath (Dyspnea)
Inability to Catch One's Breath
Poor cardiovascular performance compared to normal

2. **Referral/Treatment**

All patients with asthma should have a rescue inhaler available during practice and games, and the certified athletic trainer should have an extra rescue inhaler in an emergency situation.

Inhaled Medications

Inhaled medications are delivered directly to the airways, which is useful for lung disease. Aerosol devices for inhaled medications may include the metered-dose inhaler (MDI), dry-powder inhaler, or nebulizer. The most commonly used inhaled medications are delivered by the MDI, with or without a spacer. There are few side-effects because the medicine goes right to the lungs and not to other parts of the body.

It is critical that the patient use the prescribed MDI correctly to get the full dosage and benefit from the medication. Unless the inhaler is used in the right manner, much of the medicine may end up on the patient's tongue, back of their throat, or in the air.

Using the MDI

The Sports Medicine Staff may assist a student-athlete in the use of a prescribed MDI as follows:

- Remove the cap from the MDI and hold inhaler upright
- Shake inhaler
- Tilt patient head back slightly and have patient breath out
- Open mouth, place mouth over mouthpiece
- Press down on the inhaler to release the medication as patient starts to breathe slowly
- Patient breathes in slowly for 3-5 seconds
- Patient hold breath for 10 seconds to allow the medication to reach deeply into lungs
- Repeat puffs as prescribed, waiting 1 minute between puffs may permit the 2nd puff to reach deeper in the lungs

Patients involved in ***life-threatening asthma exacerbation*** will experience a combination of the following: shortness of breath (>30 respirations/min), mental status change, inability to speak in sentences, sweaty and unable to lie down. *It patient is not responding to or is unable to properly use their MDI, the Sports Medicine Staff should:*

1. Call EMS
2. Begin BLS protocol
3. Calculate pulse, respirations, and blood pressure
4. Maintain an airway
5. Transport patient to nearest medical facility

3. **Return to Play**- Medical clearance by a physician after an emergency occurrence
   After recovered asthma attack, when symptoms have disappeared

Seizure

1. **Management**
   Protect student-athlete from further injury. Do not forcibly restrain student-athlete. Do not place anything in or near student-athlete's mouth.
   Maintain clear airway.
   Once seizure has subsided:
   A. Perform primary and secondary surveys
   B. Check serial vital signs (heart rate, respiratory rate, blood pressure)
   C. Check for Injuries
   D. Obtain medical history

2. **Referral -** Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play -** Medical clearance from physician

Anaphalaxis/Allergic Reaction

1. **Management**
   1. Perform primary and secondary surveys
   2. Lie patient supine, legs elevated
   3. Maintain open airway
   4. Assist in administration of appropriate medication (epi-pen, Benadryl, etc.)

2. **Referral -** Activate EMS/Division of Sports Medicine Emergency Action Plan

3. **Return to Play -** Medical clearance from physician

Diabetic Emergency

1. **Management**
    1. Perform primary and secondary surveys
    2. Assist in administration of appropriate care
        a. If known hypoglycemia – give glucose
        b. If known hyperglycemia – administer insulin
        c. If unknown (hypoglycemic/hyperglycemic) – give glucose
    3. Monitor and record serial vital signs (heart rate, respiratory rate, blood pressure)

2. **Referral**

    A. Conscious: Monitor condition, if no change or improvement activate EMS/Sports Medicine Emergency Action Plan

    B. Unconscious: Activate EMS/Sports Medicine Emergency Action Plan

3. **Return to Play**

    A. Conscious: The student-athlete may return to play when they reach baseline function and are able to functionally meet demands of sport.

    B. Unconscious: Medical clearance from physician

Facial Injury

1. **Management**
    1. Perform primary and secondary surveys
    2. Considerations should be made for concussion and neck injury, treat accordingly.
    3. Immobilize cervical spine, if indicated
    4. Maintain airway
    5. Control bleeding
    6. Carefully rinse and replace avulsed skin or teeth
    7. Save amputated parts in moist, sterile dressing
    8. Save tooth in sterile saline, whole milk, saliva, or in original socket
    9. Clean and dress wound, if indicated
    10. Apply Ice and compression if indicated

2. **Referral**- Referral made to a physician or dentist if necessary

3. **Return to Play -** Medical clearance from physician or dentist

Abdominal Pain

1. **Management**
    1. Perform primary and secondary surveys
    2. Place student-athlete in a position of comfort
    3. Be alert for vomiting
    4. Give nothing by mouth
    5. Handle gently
    6. Monitor and record serial vital signs

2. **Referral** – Activate EMS/Division of Sports Medicine Emergency Action Plan
    1. Signs and symptoms of shock
    2. Severe pain

3. Presence of what appears to be radiating or referred pain
4. Tenderness, rigidity, spasm of muscles
5. Blood in urine or stool
6. Rebound tenderness
7. Prolonged discomfort, sensation of weakness or pulling groin
8. Superficial protrusion or palpable mass
9. Increasing nausea
10. Vomiting
11. Any perineal laceration
12. Penetrating trauma
13. Any doubt regarding the nature and severity of condition

3. **Return to Play -** Medical clearance from physician

Thoracic Pain

1. **Management**
    1. Perform primary and secondary surveys
    2. Cover sucking chest wounds with occlusive dressing
    3. Stabilize flail segments
    4. Obtain a detailed cardiac history
    5. Monitor and record serial vital signs

2. **Referral** – Activate EMS/Division of Sports Medicine Emergency Action Plan
    1. Signs and symptoms of shock
    2. Difficulty or labored breathing
    3. Shortness of breath – inability to catch breath
    4. Severe chest pain
    5. Atraumatic thoracic pain
    6. Diminished chest movement
    7. Deviated trachea
    8. Vomiting or coughing up blood
    9. Chest pain suspicious of cardiac origin
    10. Any doubt regarding nature and severity of the condition

3. **Return to Play -** Medical clearance from physician

Animal Bites

1. **Management**
    1. Control any bleeding
    2. If severe bleeding, activate EMS
    3. Refer to physician
    4. Determine student-athletes most recent tetanus status
    5. Report the incident to local animal control
2. **Return to Play -** Medical clearance from physician

Burns

1. **Management**

    Care for thermal (heat) burns
    1. Check scene for safety
    2. Remove student-athlete from heat source
    3. Check for life threatening conditions
    4. Cool the burn with large amounts of cold running water
    5. Cover the burn loosely with a sterile dressing
    6. Minimize shock
    7. Comfort and reassure the person

    Care for chemical burns
    1. Remove chemical as soon as possible
    2. Flush the burn with large amounts of cool running water

3. Dry chemicals should be brushed off with a gloved hand
4. Remove any contaminated clothing
5. Be aware that some chemicals can be inhaled
6. If possible, determine type of chemical

Care for electrical burns

1. Make sure scene is safe
2. In case of downed power lines, call 911 or local emergency number
3. Turn off power at its source and care for life threatening conditions
4. Be prepared to give CPR/AED care. Electricity can interrupt heart functions.

Care for radiation (sun burns)

1. Cool the burn and protect the area from further damage, keep it out of the sun

2. **Return to Play -** If student-athlete was referred to physician, medical clearance from physician is necessary.

Open/Closed Fractures Dislocation

1. **Management**
   1. Stabilize/Splint the injury
   2. Dress wounds with sterile dressing
   3. Treat for shock

2. **Referral -** Immediate referral to physician or activate EMS/Division of Sports Medicine Emergency Action Plan.

3. **Return to Play -** Medical clearance from physician

Lexington Christian Academy Sports Medicine

Cold Guidelines and Management Program

Introduction

Cold exposure can be uncomfortable, impair performance, and even become life threatening. Conditions created by cold exposure include frostbite and hypothermia. Wind-chill can make activity uncomfortable and can impair performance when muscle temperatures declines. Frostbite is the freezing of superficial tissues, usually of the face, ears, fingers, and toes. Hypothermia, a significant drop in body temperature, occurs with rapid cooling, exhaustion, and energy depletion. The resulting failure to the temperature=regulating mechanisms constitutes a medical emergency.

Hypothermia frequently occurs at temperatures above freezing. A wet and windy 30-50 degree exposure may be as serious as a subzero exposure. Wind speed interacts with ambient temperature to significantly increase body cooling. When the body and clothing are wet, the cooling is even more pronounced due to evaporation of the water held close to the skin by the wet clothing.

Clothing is one of the most important parts of keeping the athlete's body warm. Athletes should dress in layers and attempt to stay dry. Layers can be added or removed depending on temperature, activity, and wind chill. Athletes should layer themselves with an undergarment, such as cold weather UnderArmour® or a like product, next to the body followed by lightweight pile or wool layers for warmth. Athletes should use a wind block garment to avoid wind chill during workouts. Heat loss from the head and neck may be as much as 50% of total heat loss, therefore the head and neck should be covered during cold conditions. Other extremities should be covered at all times to protect from the wind chill.

Cold Exposure

- Breathing of cold air can trigger asthma attack (bronchospasm)
- Coughing, chest tightness, burning sensation in throat and nasal passage
- Reduction of strength, power, endurance, and aerobic activity
- Core body temperature reduction, causing reduction of motor output

Cold Recognition

- Shivering, a means for the body to generate heat
- Excessive shivering contributes to fatigue, loss of motor skills
- Numbness and pain in fingers, toes, ears, and exposed facial tissue
- Drop in core temperature; athlete exhibits sluggishness, slowed speech, disoriented

Environmental Assessment

- Evaluate immediate and projected weather information, including air temperature, wind, chance of precipitation or water immersion, and altitude
- Identify activity intensity requirements and clothing requirements for each individual

- Have alternate plans in place for deteriorating conditions and activities that must be adjusted or cancelled

Environmental Exposure: Duration of Outdoor Activity During Cold Conditions

The following are guidelines established by the National Athletic Trainers' Association that should be used in planning an activity with consideration to air temperature and wind-chill temperature.

Conditions should be constantly re-evaluated for change in risk, including the presence of precipitation.

30° F and below:	Be aware of the potential for injury and notify appropriate personnel of potential cold weather risks
25° F and below:	Provide additional protective clothing, cover as much exposed skin as practical, and provide opportunities and facilities for re-warming.
15° F and below:	Consider modifying activity to limit exposure or allow more frequent chances to re-warm
0° F and below:	Consider terminating or rescheduling activity

Cancellation of Games

- Transportation is unsafe for travel
- Field conditions are unsafe for competition
- The Athletic Department and Sports Medicine Team considers environmental conditions, air temperature/wind-chill, unsafe to play or practice

Lexington Christian Academy Sports Medicine

Exertional Heat Illness Prevention and Management Program

Factors Affecting Temperature Regulation

- Air Temperature
- Humidity
- Wind
- Clothing
- Adaptability of the Body
- Fluid Intake
- Activity Intensity

Susceptibility

- Athletes with prior medical history of cramping and/or heat illnesses
- Athletes with certain medical conditions
- Poorly conditioned and/or un-acclimatized athletes
- Overweight athletes / athletes with a high body-mass index (BMI)
- Athletes who constantly compete at high capacity/intensity
- Athletes with very low BMI / low body-fat
- Athletes who are ill (e.g. infection, fever, diarrhea, vomiting, etc.)
- Athletes who are taking certain medications
- Athletes who are taking certain supplements
- Athletes with poor dietary/nutrition habits
- Athletes with high core temperatures
- Athletes who have greater than 3% body weight loss during practice
- Athletes who are on restricted and/or low-salt diets
- Athletes who are heavy sweaters

Prevention Strategies & Recommendations

Pre-Season:

- Thorough & complete medical history and pre-participation physical examination
  - Supplement Notification Form (Strength Coach)
  - Medical Alert List
  - Medical Examination
- Strength and Conditioning / Acclimatization Program
- Education Initiatives with Coaching Staff
  - KHSAA Medical Symposium/Classes
  - Open Lines of Communication
  - Heat Index Modifications
  - Fluid Replacement
  - Heat Illness Recognition
- Education Initiatives with Student-Athletes
  - Open Lines of Communication
  - Diet/Hydration
  - Fluid Replacement
  - Proper Clothing
  - Supplement Notification Form (Strength Coach)
  - Rest
- Preparation of Facilities
  - Ice/Water
  - Ice Towels (if needed)
  - Coolers/Water Bottles
  - Electrolyte Supplements
  - “Cool Area” on Field
  - Ice Tubs

  - Heat Index/Temperature Sensors
  - John Deere Gators for Transport
  - Review/Revision of Emergency Action Plans
- Emergency Planning/Communication
  - Communication with Team Physicians & Local EMS
  - Cold Tubs
  - John Deere Gators for Transport

Pre-Practice:

- Monitor Weather Radar and Heat Index
- Communicate with Student-Athletes
  - Diet/Nutrition
  - Hydration
- Communicate with Coaches
  - Adjustment of Practice Times, Breaks, Intensity, etc.
- Urine Color Chart (posted in bathrooms/locker rooms)
- Availability of Electrolyte Supplements
- Field-Preparation
  - Ice/Water/Ice Towels
  - "Cool Area"
  - Ice Tubs
  - Emergency Equipment

During Practice:

- Sports Medicine Staff Availability and Communication
- Monitor Heat Index
- Monitor Fluid Intake of Student-Athletes/Coaches
- Ice/Water/Ice Towel Availability
- Electrolyte Supplement Availability
- Cold Tubs Availability

Post-Practice:

- Communicate with Student-Athletes
  - Urine Color Chart
  - Diet/Nutrition
  - Re-Hydration
    - Replace 150% of volume lost (24oz of fluid every pound lost)
    - Fulfill thirst & Eat good, nutritious meal
  - Importance of REST
  - Stay out of sun!
- Communicate with Coaches – Injury Report
- Urine Color Chart (Available in Locker Rooms)

<u>Recognition of Heat Exhaustion</u>

- Normal Blood Pressure
- Tachycardia (rapid heart rate)
- Ataxia and Coordination Problems
- Cold, Damp, & Ashen Skin
- Nausea and/or Vomiting
- Headache, Dizziness, and/or Faintness
- Profuse Sweating
- Rapid & Shallow Breathing
- Weak Pulse
- Muscle Spasms/Cramps
- Thirst
- Decreasing Consciousness
- Rapid Recover with Treatment

Emergency Treatment of Heat Exhaustion

- Transport athlete to cool place/remove from environment
- Remove equipment and/or constrictive clothing
- Monitor vital signs (BP, pulse, respirations, body temperature)
- Push Fluids/Rehydrate
- Ice Tub
- Place ice towels on athlete
- Replenish electrolytes

Recognition of Heat Stroke

A **SERIOUS, LIFE-THREATENING** condition requiring **IMMEDIATE** medical attention

The ability to rapidly and accurately assess core body temperature and CNS functioning is critical to the proper evaluation of exertional heat stroke. Medical staff should be properly trained and equipped to assess core temperature via rectal thermometer when feasible.

Aggressive and immediate whole-body cooling is the key to optimizing treatment of exertional heat stroke. The duration and degree of hyperthermia may determine adverse outcomes. If untreated, hyperthermia-induced physiologic changes resulting in fatal consequences may occur within vital organ systems (e.g. muscle, heart, brain, etc.).

- Sudden onset
- High core body temperature (104° F or higher)
- Pulse rate of 160 BPM or greater
- Rapid respirations
- Red, hot, dry, & flushed skin
- Nausea and/or vomiting
- Lack of perspiration
- Dry mouth and/or intense thirst
- Headache, dizziness, confusion, and/or lethargy
- Staggering body control, poor judgment, and/or bizarre behavior
- Convulsions / Muscle twitching
- Decreasing consciousness

Emergency Treatment of Heat Stroke

- Activate EMS
  - **Only transport after patient is stable, and core body temperature is lowered**
- Transport to cool area/remove from environment
- Remove equipment and constrictive clothing
- **Cool athlete rapidly via cold-water immersion**
- Maintain ABCs
- Monitor vital signs
- Push fluids (if conscious)
- Place ice towels on athlete
- Replenish electrolytes

Heat Index

The Heat Index reading is an accurate method of determining environmental conditions, which would predispose athletes to heat illnesses. The dry blub and wet bulb temperatures are measured using a psychrometer. One should follow these guidelines when calculating the Heat Index:

- Measure the Heat Index at the specific playing site
- Measure the Heat Index prior to practice
- Measure the Heat Index every 45-60 minutes during a practice session

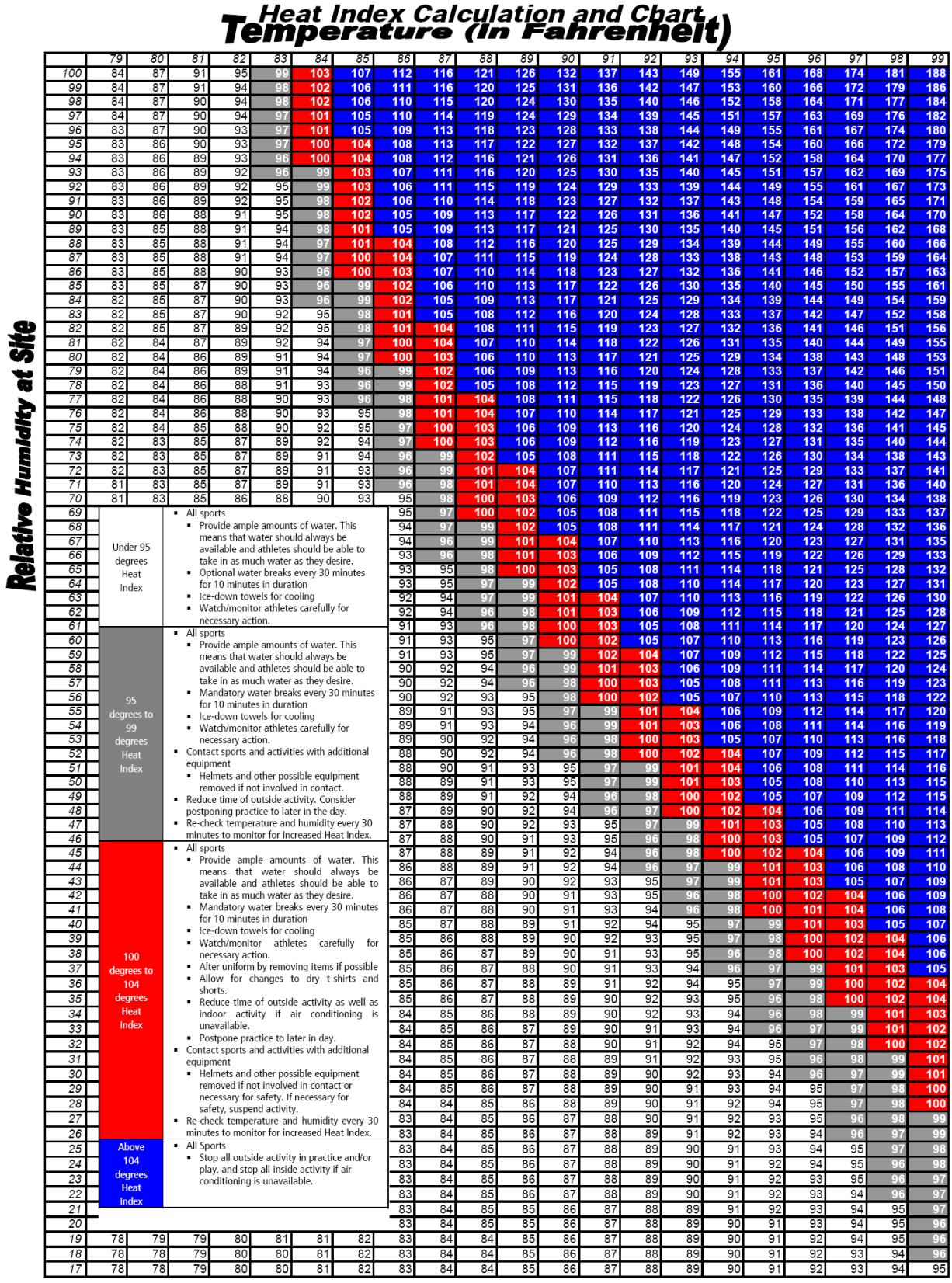
KHSAA Heat Index Recommendations:

UNDER 95 DEGREES HEAT INDEX OR WBGT 86.9 AND BELOW
a) All sports (1) Water should always be available and athletes be able to take in as much water as they desire; (2) Optional water breaks every 30 minutes for 10 minutes in duration to allow hydration as a group; (3) Have towels with ice for cooling of athletes as needed; (4) Watch/monitor athletes carefully for necessary action; and (5) Re-check temperature and humidity every 30 minutes if temperature rises in order to monitor for increased Heat Index.
95 TO 99 DEGREE HEAT INDEX95 DEGREES TO 99 DEGREES HEAT INDEX OR WBGT 87.0 TO 89.8 A) ALL SPORTS
a) All sports (1) Water should always be available and athletes should be able to take in as much water as they desire; (2) Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group. In sports or sport-activities with multiple simultaneous contests or practices, the required monitoring and rest breaks shall be taken at the same time for all contests or practices; (3) All breaks shall be taken in areas outside of direct sunlight; (4) Have towels with ice for cooling of athletes as needed; and (5) Watch/monitor athletes carefully for necessary action. b) Additional Steps for Contact sports and activities with additional required protective equipment: (1) Helmets and other required equipment (by rule) should be removed when athlete not directly involved with competition, drill or practice, and it is not otherwise required by rule; (2) Reduce time of outside activity. Consider postponing practice to later in the day; and (3) Re-check temperature and humidity every 30 minutes to monitor for increased Heat Index.
100 DEGREES (ABOVE 99) TO 104 DEGREES HEAT INDEX OR WBGT BETWEEN 90.0 AND 91.9
a) All sports (1) Water should always be available and athletes should be able to take in as much water as they desire; (2) Mandatory water breaks every 30 minutes for 10 minutes in duration to allow for hydration as a group. In sports or sport-activities with multiple simultaneous contests or practices, the required monitoring and rest breaks shall be taken at the same time for all contests or practices; (3) All breaks shall be taken in areas outside of direct sunlight; (4) Have towels with ice for cooling of athletes as needed; (5) Watch/monitor athletes carefully for necessary action; (6) Alter uniform by removing items if possible and permissible by rules; (7) Allow for changes to dry T-shirts and shorts by athletes at defined intervals; (8) Reduce time of outside activity as well as indoor activity if air conditioning is unavailable; and (9) Postpone practice to later in day. b) Additional Steps for Contact sports and activities with additional required protective equipment: (1) If helmets or other protective equipment are required to be worn by rule or normal practice, suspend practice or competition immediately and resumption may not occur until the index is99 degrees or below; (2) For sports that do not have mandatory protective equipment, reduce time of outside activity and consider postponing practice to later in the day; and (3) Re-check temperature and humidity every 30 minutes to monitor for changes inHeat Index.
ABOVE 104 DEGREES HEAT INDEX OR OVER 92 WBGT
a) All sports (1) Stop all outside activity in practice and/or play, and stop all inside activity if air conditioning is unavailable.
CONTINUAL USAGE AND MONITORING
a) This procedure is to be used until such time as the temperature is below 84 degrees as no combination of heat and humidity at that level will result in a need to curtail activity. b) The KHSAA will use September 15 as the standard date for the recording of the Heat Index forms in the fall, and April 15 as the start date in the spring. c) Member schools should remember that the monitoring shall continue any time that a com bination of heat and humidity at that level could result in a need to curtail activity (an ambient temperature of 83 degrees or higher).

Modification of Athletic Activities:

- Chain of Command: The decision to modify and/or terminate an athletic activity in the event of excessive heat and/or poor air quality should be made by a member of the Sports Medicine department

KHSAA Heat Index Chart:



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100	84	87	91	95	99	103	107	112	116	121	126	132	137	143	149	155	161	168	174	181	188
99	84	87	91	94	98	102	106	111	116	120	125	131	136	142	147	153	160	166	172	179	186
98	84	87	90	94	98	102	106	110	115	120	124	130	135	140	146	152	158	164	171	177	184
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96	83	87	90	93	97	101	105	109	113	118	123	128	133	138	144	149	155	161	167	174	180
95	83	86	90	93	97	100	104	108	113	117	122	127	132	137	142	148	154	160	166	172	179
94	83	86	89	93	96	100	104	108	112	116	121	126	131	136	141	147	152	158	164	170	177
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64								93	95	97	99	102	105	108	110	114	117	120	123	127	131
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61								91	93	96	98	100	103	105	108	111	114	117	120	124	127
60								91	93	95	97	100	102	105	107	110	113	116	119	123	126
59								91	93	95	97	99	102	104	107	109	112	115	118	122	125
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57								90	92	94	96	98	100	103	105	108	111	113	116	119	123
56								90	92	93	95	98	100	102	105	107	110	113	115	118	122
55								89	91	93	95	97	99	101	104	106	109	112	114	117	120
54								89	91	93	94	96	99	101	103	106	108	111	114	116	119
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17	78	78	79	80	80	81	82	83	84	84	85	86	87	88	89	90	91	92	93	94	95

Hydration/Urine Color Chart:

AM I HYDRATED?

Urine Color Chart

1		
2		**If your urine matches the colors 1, 2, or 3, you are properly hydrated.**
3		**Continue to consume fluids at the recommended amounts.**
4		**If your urine color is below the RED line, you are**
5		**<u>DEHYDRATED</u> and at risk for cramping and/or a heat illness!!**
6		**<u>YOU NEED TO DRINK MORE WATER!</u>**
7		
8		

References

Clements JM, Casa DJ, Knight JC, McClung JM, Blake AS, Meenen PM, Gilmer AM, Caldwell KA. Ice-water and cold-water immersion provide similar cooling rates in runners with exercise-induced hyperthermia. JAT 2002; 37: 146-150.

McDermott BP, Casa DJ, Ganio MS, Lopez RM, Yeargin SW, Armstrong LE, Maresh CM. Acute Whole-Body Cooling for Exercise-Induced Hyperthermia: A Systematic Review. JAT 2009; 44(1): 84-93.

Binkley HM, Beckett J, Casa DJ, Kleiner DM, Plummer PE. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. JAT 2002;37(3):329-343.

Air Quality Safety Guidelines

Air quality is an important aspect of environment safety. Air quality is measured using the Air Quality Index (AQI). AQI is a measure of 5 major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The level of the AQI will be measured by using weather tracking websites and apps including but not limited to Weather.com,

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

We will be following the NCAA's Air Quality recommendations for safely participating.

At AQI's over 150, outdoor activities will be shorted to limit exposure, exertion will be limited to decrease the amount of pollutant absorbed, and sensitive athlete will be moved indoors.

At AQI's of 200 or above, consideration will be made to cancel all outdoor activities and brings activities indoors. Sensitive individuals will be moved indoors.

At AQI's of 300 or above, all activities will be moved indoors or canceled if indoor facilities are not readily available.

Lexington Christian Academy Sports Medicine

Lightning Safety Policy

Introduction

Lightning is the most frequent thunderstorm hazard that people experience on a yearly basis. In the past 100 years, it has been in the top 2 of storm related deaths in the U.S.A. Because of the high risk to student-athletes, staff, and fans, extensive caution must be taken in regard to lightning safety. Evacuation from the stands and playing field are vital to the safety of all in the presence of a possible lightning incident. This policy is in place to diminish the risk of all lightning-related trauma.

Responsibility for Removing Athletes

The responsibility for removing athletes from the practice/game area lies with the head coach of the particular sport. If the head coach is not present, the assistant coach will assume responsibility. The staff athletic trainer will advise the head coach/assistant coach.

The staff athletic trainer will watch for lightning and listen for thunder. He or she will be responsible for keeping track of the of the radar and lightning strikes on either a computer or a mobile device, and will keep the head coach informed.

Mobile Device Radar and Lightning Detector

It is acknowledged that there are many mobile applications which will show a weather radar and an estimate of lightning strike distances (i.e. WeatherBug™). Athletic Trainers and coaches understand that these methods are all imperfect, but will assist in decisions of when to post-pone an athletic event.

Criteria for Evacuation of the Practice and Game Are

- All personnel are to evacuate to a safe structure or location if the athletic trainer indicates to do so. If needed, the school will be opened up to house athletes, staff, parents, and fans. The entrance used will be the south doors that lead to the basement of the school. If entering the main building, cleats should be removed to prevent both injuries and damage to the facility. In the event that the school can not be opened, any vehicle with a hard metal roof and roll-up windows (not a convertible or golf cart) can provide a measure of safety. Do not touch the sides of the vehicle. **Baseball and softball dugouts do not meet the aforementioned criteria.**
- Visiting team athletes, coaches, and personnel shall proceed to either their team bus or the basement. THE TEAMS ARE NOT TO INTERACT DURING THE GAME SUSPENSION.
- If unable to reach safe shelter, persons should stay away from the tallest trees or objects (light poles, flag poles, etc.), metal objects (fences, bleachers, etc.), individual trees, standing pools of water and open fields. Persons should avoid being the highest object in a field. In situations where thunder and/or lightning may or may not be present, yet you feel your hair stand on end and skin tingle, lightning is imminent. Therefore, everyone should assume a crouched position on the ground with only the balls of the feet touching the ground. Persons should wrap their arms around their knees and lower their head. DO NOT lie flat. Minimize the body's surface area and minimize contact with the ground.
- Use of a land-line telephone and/or using shower and plumbing facilities should be avoided, except in emergency situations. A cellular and/or portable remote phone is a safe alternative to land-line phones, if the person and the antenna are located within as safe structure or location, and if all other precautions are followed.

Criteria for Safe Return to the Practice and Game Area

In accordance with KHSAA policy, personnel should not return to the practice/game area until thirty (30) minutes have passed since the last lightning flash or the last sound of thunder.

Lightning Safety Guidelines

Do not hesitate to help a victim of a lightning strike. Individuals struck by lightning do not carry a charge and it is safe to touch them to render medical treatment. If possible, an injured person should be moved to a safer location before beginning first aid. Prompt, aggressive CPR has been highly effective for the survival of victims of lightning strikes, the existence of a blue sky and the absence of rain do not eliminate the possibility of lightning. Lightning awareness should be increased with the first flash of lightning or the first clap of thunder no matter how far away.

Severe Weather Policy from KHSAA Handbook

The Referee or head official must delay or cancel a competition at the first sound of lightning or thunder at the site and the site should be cleared of all persons immediately by event administration. If it is anticipated that the storm will pass, the competition may be resumed following a three (3) minute warm-up period, no sooner than thirty (30) minutes after the last sight of lightning or the last sound of thunder.

If the severe weather is of great length or intensity, the Referee or lead contest official has the responsibility and authority to cancel the competition. Officials are encouraged to learn the weather forecast prior to game time. Safety of the public and participants is the most important factor in any decision of this type (KHSAA Policies and Procedures).

Examples of Safety Shelters for Sports

- Baseball: Lower Level of School
- Softball: Lower Level of School
- Football: Lower Level of School
- Soccer: Lower Level of School
- Tennis: Auxiliary Gymnasium
- Track/Field & XC: Lower Level of School
- Swimming/Diving: Pool Clubhouse
- B/G Golf: Clubhouse/Cars

References:

Position Statement Lightning Safety for Athletics and Recreation NATA. (2013).
NCAA Guidelines 1D: Lightning Safety. NCAA Sports Medicine Handbook. (1999).
Policies and Procedures: Special Contest Notes and Rules. KHSAA Handbook (2005-2006).

Lexington Christian Academy Sports Medicine

Infectious Skin Disease Guidelines

INFECTIOUS DISEASE AND MRSA

Who Gets Skin Infections?

Skin infections, including MRSA, ringworm, and impetigo have been traditionally associated with outbreaks in health-care facilities, but they are becoming increasingly common in student-athletes participating in close contact sports. Skin infections are spread either by direct physical contact or indirect touching of contaminated objects. This includes touching, using, and/or sharing sheets, towels, clothes, equipment, dressings, personal items, bar soap, etc. which have been used by someone who has one of these skin infections, along with poor hygiene habits (e.g. hand washing, showering, etc.).

What is "Staph"/MRSA?

Staphylococcus aureus, often referred to as "**staph**", is a common type of bacteria that can live harmlessly on the skin or in the nose of 25-35% of healthy people. Occasionally, staph can cause an infection. Staph bacteria are one of the most common causes of skin infection in the United States, but most of these infections are minor, such as pimples or boils. Most of these infections can be treated without antibiotics, however, some staph infections can cause serious infections, such as pneumonia, bloodstream, bone, and joint infections, and surgical wound infections.

In the past, most serious staph bacterial infections were treated with a certain type of antibiotic related to penicillin. In recent years, treatment of these infections has become more difficult because staph bacteria have become resistant to various antibiotics. These resistant bacteria are called **methicillin-resistent staphylococcus aureus (MRSA)**. According to the CDC, 1% of the population is colonized with MRSA. MRSA is one type of skin infection among several that are of concern in competitive sports.

What Do Skin Infections Look Like?

"Staph" and/or MRSA usually first presents as some type of skin or soft tissue infection such as pimples, abscesses, pustules, and/or boils. Some can be red, swollen, painful, and/or have pus or other drainage. The pustules may be confused with insect bites initially, and may be associated with existing turf burns and/or abrasions.




Tinea Corporis and Tinea Capitis, or ringworm as it is commonly called, are fungal infection that look circular in shape, and have a clear darker red outline. They can be found on the head or on the body.


Herpes Simplex is a viral infection. It looks like a clear bubble with clear liquid inside. There can be on large legion, or many small legions grouped in one area.

Molluscum Contagiosum is a viral infection. They appear to be flesh-colored or light pink raised areas 10mm or smaller.

Furuncles and carbuncles are bacterial infections that create tender areas that develop deep swelling and produce a nodule underneath.

Folliculitis is a bacterial infection at the base of the hair follicle. They appear white and circular.

Impetigo is a bacterial infection that creates a red/pinkish raised blisted that easily burst. The key distinguishing feature is a honey-colored crust that develops.

What To Do:

Without proper referral and care, more serious infections may cause pneumonia, bloodstream, bone, and/or joint infections, and/or surgical wound infections. ***If you or anyone you know has what appears to be what looks like "staph" and/or any other skin infection, please contact Sports Medicine Team Physician and/or Staff Member as soon as possible for evaluation.***

Prevention of Skin Infections:

Although treatable, there can be complications associated with "staph" and MRSA infections, making prevention the best measure to combat these infections. The CDC suggests the following measures for preventing skin infections, including MRSA:

1. Practice good hand hygiene by washing hands frequently and in a thorough fashion with soap and warm water
2. Take a shower with hot water and wash with soap following activities
3. Avoid sharing towels, equipment, razors, soap, etc.
4. Use a barrier between your skin and equipment
5. Wipe surfaces of equipment before and after use
6. Clean and properly cover any open wounds, such as turf burns, abrasions, lacerations, etc. with an appropriate bandage at all times
7. Avoid whirlpools, hydrotherapy pools, cold tubs, swimming pools, and other common tubs if you have an open wound
8. Maintain clean facilities and equipment
9. ***Do not ignore skin infections, pimples, pustules, abscesses, etc. Report these to a Sports Medicine staff member and/or physician immediately.***

Return to Play After Infectious Disease
Following the NATA Skin Disease Position Statement Return to Play Guidelines

Condition	Return to Play Guidelines
Tinea Corporis	Minimum 72 hours topical fungicide terbinafine (Lamisil) or naftifine (Naftin) Lesions must be covered with a gas-permeable dressed followed by under wrap and stretch tape
Tinea Capitis	Minimum of 2 wk systemic antifungal therapy
Herpes Simplex (Primary)	Free of systemic symptoms of viral infection (fever, malaise, etc) No new lesion for at least 72 h

	No moist lesions; all lesions must be covered with a firm, adherent crust Minimum 120 h of systemic antiviral therapy Active lesions cannot be covered to allowed participation
Herpes Simplex (Recurrent)	No moist lesions; all lesions must be covered with a firm, adherent crust Minimum 120 h systemic antiviral therapy Active lesions cannot be covered to allow participation
Molluscum Contagiosum	Lesions must be curetted or removed Localized lesions may be covered with a gas-permeable dressing followed by under wrap and stretch tape
Furuncles, Carbuncles, folliculitis, impetigo, cellulitis, or MRSA	No new lesions at least 48 hours Minimum 72 h antibiotic therapy No moist, exudative, or draining lesions Active lesions cannot be covered to allow participation

Lexington Christian Academy Sports Medicine

Concussion Guidelines

Consensus Statement on Concussion in Sport: The 5th International Conference on Concussion in Sport, Berlin, October 2016: http://bjsm.bmj.com/content/early/2017/04/26/bjsports-2017-097699

Purpose:

The following policy and procedures on assessment and management of concussions as well as return to play guidelines has been developed in accordance to the Lexington Christian Academy Sports Medicine's mission statement to provide quality healthcare services and assure the well-being of each student-athlete at LCA.

The LCA Sports Medicine Department recognizes that sport induced concussions pose a significant health risk for those student-athletes participating in athletics at LCA. With this in mind, the Sports Medicine Department has implemented policies and procedures to assess and identify those student-athletes who have suffered a concussion.

Definition:

Concussion, a subset of a mild traumatic brain injury (mTBI), is a violent shaking or jarring action to the brain, usually as a result of impact with an object or ground. This results in immediate partial or complete impairment of neurological function. As defined by the Berlin 2016 consensus statement, a sports related concussion (SRC) "is a traumatic brain injury induced by biomechanical forces. Several common features that may be utilized in clinically defining the nature of a concussive head injury include:

1. SRC may be caused either by a direct blow to the head, face, neck, or elsewhere on the body with an impulsive force transmitted to the head.
2. SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours.
3. SRC may result in neuropathological changes, but the acute clinical signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.
4. SRC results in a range of clinical signs and symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged."

Signs and Symptoms of Concussion:

Certified athletic trainers and coaches all need to be aware of the signs and symptoms of concussions to properly recognize and intervene on behalf of the student-athlete.

Physical Symptoms	**Cognitive Symptoms**	**Emotionality Symptoms**
Headache	Memory Loss	Irritability
Vision Difficulty	Attention Disorders	Sadness
Nausea& Dizziness	Reasoning Difficulty	Nervousness
Fatigue		Sleep Disturbances
Balance Difficulties		

Light Sensitivity

Concussion Management and Return to Play Guidelines:

In any circumstance where a concussion is suspected in an athlete, the first priority is to remove the athlete from further competition until a thorough sideline assessment can be made. Furthermore, if there is a question about the state of mental clearing it is best to err in the direction of conservative assessment and withhold the athlete from further competition until a physician assessment can be arranged.

The recommendations in this document for the management of concussion are based on review of the medical literature including, but not limited to, statements by the *Consensus Statement on Concussion in Sport* held in Berlin, Germany in 2016.

Guidelines and Procedures for Coaches:

Recognize: All coaches should become familiar with the signs and symptoms of concussion. Coaches and medical professionals should understand that SRC is an evolving injury, with rapidly changing clinical signs and symptoms, which may reflect the underlying physiological injury in the brain. Immediate sideline evaluation by a medical professional, covering cognitive function is an essential component in the assessment of this injury. Neuropsychological test batteries that assess attention and memory function have been shown to be practical and effective. Such tests include the SCAT5, which incorporates the Maddocks' questions and the Standardized Assessment of Concussion (SAC). *Please see addendum for the SCAT5.* It is acknowledged that this test is for a rapid screen, and is not meant to replace a more comprehensive evaluation that is done by a medical professional. This is not a standalone test. Players demonstrating clear on-field signs of SRC (i.e., loss of consciousness, tonic posturing, and balance disturbance) should immediately be removed from sporting participation for further evaluation.

Remove: If a coach suspects the athlete has sustained a concussion, the athlete should be removed from activity until evaluated medically.

> **Any athlete who exhibits signs or symptoms of a concussion should be removed immediately, assessed, and <u>should</u> <u>not</u> be allowed to return to activity that day**

According the 2016 Berlin Consensus Statement on Sport Concussion, "When a player shows any symptoms or signs of an SRC:

1. The player should be evaluated by a physician or other licensed healthcare provider on site using standard emergency management principles, and particular attention should be given to excluding a cervical spine injury.
2. The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no healthcare provider is available, the player should be safely removed from practice or play and urgent referral to a physician arranged.
3. Once the first aid issues are addressed, an assessment of the concussive injury should be made using the SCAT5 or other sideline assessment tools.
4. The player should not be left alone after the injury, and serial monitoring for deterioration is essential over the initial few hours after injury.
5. A player with diagnosed SRC should not be allowed to return to play on the day of injury."

Re-Evaluate: An athlete may be evaluated on the sideline, and subsequently in an office or clinical setting, but it is acknowledged that continual re-evaluation of the patient is needed as signs and symptoms may become present minutes to hours after the initial injury.

"Advanced neuroimaging, fluid biomarkers and genetic testing are important research tools, but require further validation to determine their ultimate clinical utility in evaluation of SRC."

Rest and Rehabilitation: It is recommended that athletes who sustained a SRC should rest until symptom-free, especially during the acute phase after an injury. Most consensus statements promote recover by minimizing brain energy demands following concussion. Research continues to analyze the post-acute phase of recovery after a SRC, including the gradual increase of cognitive and physical exertion. It is widely accepted, however, that cognitive and physical activity should be subthreshold of concussion symptoms.

SRCs can result in various symptoms, and can be associated with injury to the cervical spine and peripheral vestibular system. The literature has not evaluated early interventions, as most individuals recover in 10–14 days. A variety of treatments may be required for ongoing or persistent symptoms and impairments following injury. The data support interventions including psychological, cervical and vestibular rehabilitation. A multi-disciplinary approach to treatment is beneficial.

Refer:

1. Coaches should report ALL head injuries to the Certified Athletic Trainer as soon as possible for medical assessment and management, and for coordination of home instructions and follow-up care.
2. Coaches should seek assistance from the host site ATC if at an away contest
3. If the ATC is unavailable, or the athlete is injured at an away contest, the coach is responsible for notifying the athlete's parents of the injury
4. In the event that an athlete's parents cannot be reached, and the athlete is able to be sent home (rather than directly to MD):
    a. The coach or ATC should insure that the athlete will be with a responsible individual, who is capable of monitoring the athlete and understanding the home care instructions, before allowing the athlete to go home
    b. The coach or ATC should continue efforts to reach the parent
    c. If there is any question about the status of the athlete, or if the athlete is not able to be monitored appropriately, the athlete should be referred to the emergency department for evaluation. A coach or ATC should accompany the athlete and remain with the athlete until the parents arrive.
    d. Athletes with suspected head injuries should not be permitted to drive home.

Recovery: It is important to understand that clinical recovery from an SRC includes a return to normal activities, including school, work and sport. The athlete must have a resolution of post-concussion-related symptoms and a return to clinically normal balance and cognitive functioning. Establishing a firm time line for recovery after a SRC is difficult, and it should be understood each individual patient needs to be treated as a unique case. Persistent symptoms, including but not limited to chronic migraines, anxiety, post-traumatic stress disorder, attention problems, and sleep dysfunction, need to be continually evaluated through the recovery process.

Follow-Up Care of the Athlete During the School Day:

Responsibilities of the Student's Guidance Counselor:

1. Monitor the student closely and recommend appropriate academic accommodations for students who are exhibiting symptoms of post-concussion syndrome
2. Communicate with the teachers to provide the most effective care for the student
3. Notify the student's P.E. teacher immediately that the athlete is restricted from all physical activity until further notice

Return to School Strategy:

Rehabilitation Stage	Activity	Goal of Each Step
1. Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (i.e. reading, texting, screen time). Start with 5-15 minutes at a time and gradually build up and cognitive rest	Gradual return to typical activities
2. School activities	Homework, reading or other cognitive activities outside of the classroom	Increase tolerance to cognitive work
3. Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day	Increase academic activities
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

Return to Play Guidelines:

Physician orders need to be given to begin a return to play protocol. Neuro-cognitive testing in conjunction with a physical exam and additional diagnostic tests as needed will determine when a student-athlete will return to activity. The process of recovery and return to participation follows a graduated stepwise rehabilitation strategy. All cases will be handled on a case-by-case basis. The decision by the Team Physician and Athletic Trainer for all cases of an athlete's return to activity is final.

Rehabilitation Stage	Activity	Goal of Each Step
1. Symptom-limited activity	Daily activities that do not provoke symptoms	Gradual reintroduction of work/school activities
2. Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training.	Increase heart rate
3. Sport-specific exercise	Running or skating drills. No head impact activities.	Add movement
4. Non-contact training drills	Harder training drills, i.e. passing drills. May start progressive resistance training.	Exercise, coordination and Increased thinking.
5. Full contact practice	Following medical clearance, participate in in normal training activities.	Restore confidence and assess functional skills by coaching staff.
6. Return to sport	Normal game play	

Reconsider: The 5th international consensus statement on concussion in sport in Berlin 2016 acknowledged that special populations should be managed differently and made recommendations for elite and young athletes.

Elite and Non-Elite Athletes. All athletes, regardless of level of participation, should be managed appropriately using the management principles outlined above.

Child and Adolescent Athlete. "We recommend that child and adolescent guidelines refer to individuals 18 years or less. Child-specific paradigms for SRC should apply to children aged 5–12 years, and adolescent-specific paradigms should apply to those aged 13–18 years. The literature does not adequately address the question of age groups in which children with SRC should be managed differently from adults. No studies have addressed whether SRC signs and symptoms differ from adults. The expected duration of symptoms in children with SRC is up to 4 weeks, and further research is required to identify predictors of prolonged recovery. It is recommended that age-specific validated symptom-rating scales be used in SRC assessment, and further research is required to establish the role and utility of computerized neuropsychological testing in this age group. Similar to adults, a brief period of physical and cognitive rest is advised after SRC followed by symptom-limited resumption of activity. Schools are encouraged to have an SRC policy that includes education on SRC prevention and management for teachers, staff, students and parents, and should offer appropriate academic accommodation and support to students recovering from SRC. Students should have regular medical follow-up after an SRC to monitor recovery and help with return to school, and students may require temporary absence from school after injury. Children and adolescents should not return to sport until they have successfully returned to school. However, early introduction of symptom-limited physical activity is appropriate."

KHSAA Rule:

Kentucky High School Athletic Association
and KHSAA Member Schools

IMPLEMENTATION OF NFHS PLAYING RULES CHANGES
RELATED TO CONCUSSION AND CONCUSSED ATHLETES
Released: June, 2010, Commissioner Julian Tackett

In its various sports playing rules, the National Federation of High Schools (NFHS) has implemented a standard rule change in all sports dealing with concussions in student-athletes. The basic rule in all sports (which may be worded slightly differently in each rule book due to the nature of breaks in time intervals at contests in different sports) states:

Any athlete who exhibits signs, symptoms, or behaviors consistent with a concussion (such as loss of consciousness, headache, dizziness, confusion, or balance problems) shall be immediately removed from the contest and shall not return to play until cleared by an appropriate health-care professional. (Please see NFHS Suggested Guidelines for Management of Concussion in the Appendix in the back of each NFHS Rules Book).

To implement this rule, the KHSAA has defined the following parameters to guide KHSAA licensed officials and member school representatives in implementing this change:

What is the role of contest officials in administering the new rule?

- Officials are to review and know the signs and symptoms of concussion and to direct immediate removal of any athlete who displays these signs or symptoms.
- Officials have no other role in the process dealing with this rules change.

Who decides if an athlete has been concussed (has had a concussion)?

- An MD (Medical Doctor), DO (Doctor of Osteopathy), PA (Physician's Assistant), ARNP (Advanced Registered Nurse Practitioner) or ATC (Certified Athletic Trainer) is empowered to make the on site determination that an athlete has received concussion.
- If any one of these individuals has answered that "yes", there has been a concussion, that decision is final.

Can an athlete return to play on the same day as he/she receives a concussion?

- No, under no circumstances can that athlete return to play in that event that day.
- If the event continues over multiple days, then the designated event physician has ultimate authority over return to play decisions.

Once the day has completed, who can issue authorization to return to practice / competition in the sport?

- Once a concussion has been diagnosed by one of the above listed on site providers, only an MD or DO can authorize subsequent return to play, and such shall be in writing to the administration of the school.
- School administration shall then notify the coach as to the permission to return to practice or play.

Fundamental Reminder about this change

- It has always been the ultimate responsibility of the coaching staff, in all sports, to ensure that players are only put into practice or contests if they are physical capable of performing.

NFHS Suggested Concussion Management by Health Care Professionals (once the "yes" answer has been determined on the night of competition)

1. No athlete should return to play (RTP) or practice on the same day of a concussion.
2. Any athlete suspected of having a concussion should be evaluated by an appropriate health-care professional that day.
3. Any athlete with a concussion should be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition.
4. After medical clearance, return to play should follow a step-wise protocol with provisions for delayed return to play based upon the return of any signs or symptoms.

Other resources

The NFHS has developed a new 20-minute online coach education course – *Concussion in Sports – What You Need to Know*, the NFHS *Suggested Guidelines for Management of Concussion in Sports* brochure, the NFHS *Sports Medicine Handbook*, materials from the CDC Heads Up program and other materials should all be made available to officials, parents, athletes and schools.

Lexington Christian Academy Sports Medicine

Head Injury Home Instructions

Athlete:_____ Date of Injury:_____ Sport:_____

Home Phone: _____ Parent/Guardian: _____

Your son/daughter has sustained a head injury while participating in _____. In some instances, the signs of a concussion do not become obvious until several hours or even days after the injury. Please be especially observant for the following signs and symptoms:

- Headache (especially one that increases in intensity*)
- Nausea and vomiting*
- Difference in Pupil Size from R to L; Dilated pupils*
- Mental confusion/behavior changes
- Dizziness
- Memory Loss
- Ringing in Ears
- Changes in Gait or Balance
- Blurry or Double Vision*
- Slurred Speech*
- Noticeable Changes in Level of Consciousness (Difficulty Awakening, or Losing Consciousness Suddenly*)
- Seizure Activity*
- Decreased or Irregular Pulse OR Respiration*

***Seek Medical Attention at the Nearest Emergency Department**

The best guideline is to note symptoms that worsen, and behaviors that seem to represent a change in your son/daughter. If you have any questions or concern at all about the symptoms you are observing, contact a physician for instructions, or seek medical attention at the closest emergency department. Otherwise, you can follow the instructions outlined below:

It Is OK To:
- Use acetaminophen (Tylenol) for headaches
- Use ice pack on head/neck
- Eat a light diet
- Go to sleep
- Rest (No strenuous activity)

There Is NO Need To:
- Check eyes with flashlight
- Wake up every hour
- Test reflexes
- Stay in bed

Do NOT:
- Drive while symptomatic
- Exercise
- Take ibuprofen, aspirin, or other anti-inflammatory medications

Please remind your child to check in with the Certified Athletic Trainer the next day of school. Your child may also need to check in with the Guidance Department if there are any exams/reports due in the next few days.

Recommendations Provided to: _____ Phone #:_____

Recommendations Provided by:_____ Phone #:_____

Date: _____ Time: _____

Lexington Christian Academy Sports Medicine

BESS Test

The Balance Error Scoring System (BESS)

Obtain Preseason Baseline Score; Compare with Post-Concussion Score[33-34]

The Balance Error Scoring System[33-34] provides a portable, cost-effective and objective method of assessing static **postural stability**. The BESS can be used to assess the effects of mild head injury on static postural stability. Information obtained from this clinical balance tool can be used to assist clinicians in making return to play decisions following mild head injury. The BESS can be performed in nearly any environment and takes approximately 10 minutes to conduct.

The balance-testing regime consists three stances on two different surfaces. The three stances are **double leg stance**, **single leg stance** and **tandem stance**. The two different surfaces include both a **firm** (ground) and **foam** surface. **Athletes' stance should consist of the hands on the iliac crests, eyes closed and a consistent foot position depending on the stance**. Shoes should not be worn.

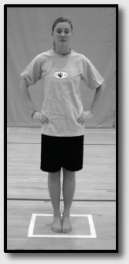
In the **double leg stance**, the feet are flat on the testing surface approximately pelvic width apart.

In the **single leg stance** position, the athlete is to stand on the non-dominant leg with the contralateral limb held in approximately 20° of hip flexion, 45° of knee flexion and neutral position in the frontal plane.

In the **tandem stance** testing position, one foot is placed in front of the other with heel of the anterior foot touching the toe of the posterior foot. The athlete's non-dominant leg is in the posterior position. Leg dominance should be determined by the athlete's kicking preference.

Administering the BESS: Establish baseline score prior to the start of the athletic season. After a concussive injury, re-assess the athlete and compare to baseline score. Only consider return to activity if scores are comparable to baseline score. Use with Standardized Symptom Scale Checklist.

Scoring the BESS: Each of the trials is **20 seconds.** Count the number of errors (deviations) from the proper stance. The examiner should begin counting errors only after the individual has assumed the proper testing position.


Double Leg Stance
Firm Surface


Single Leg Stance
Firm Surface


Tandem Stance
Firm Surface


Double Leg Stance
Foam Surface


Single Leg Stance
Foam Surface


Tandem Stance
Foam Surface

Errors:
- **Moving the hands off the hips**
- **Opening the eyes**
- **Step, stumble or fall**
- **Abduction or flexion of the hip beyond 30°**
- **Lifting the forefoot or heel off of the testing surface**
- **Remaining out of the proper testing position for greater than 5 seconds**

The maximum total number of errors for any single condition is 10.

If a subject commits multiple errors simultaneously, only one error is recorded.

B.E.S.S. SCORECARD		
Count Number of Errors max of 10 each stance/surface	FIRM Surface	FOAM Surface
Double Leg Stance (feet together)		
Single Leg Stance (non-dominant foot)		
Tandem Stance (non-dominant foot in back)		
TOTAL SCORES: total each column		
B.E.S.S. TOTAL: (Firm+Foam total)		

Airex™ Foam Balance Pads available at **www.power-systems.com** or through most sporting goods stores.

Lexington Christian Academy Sports Medicine

SCAT 5 Test

SCAT5©

SPORT CONCUSSION ASSESSMENT TOOL – 5TH EDITION

DEVELOPED BY THE CONCUSSION IN SPORT GROUP
FOR USE BY MEDICAL PROFESSIONALS ONLY

supported by

Patient details

Name: _____

DOB: _____

Address: _____

ID number:

Examiner: _____

Date of Injury: _____ Time: _____

WHAT IS THE SCAT5?

The SCAT5 is a standardized tool for evaluating concussions designed for use by physicians and licensed healthcare professionals[1]. The SCAT5 cannot be performed correctly in less than 10 minutes.

If you are not a physician or licensed healthcare professional, please use the Concussion Recognition Tool 5 (CRT5). The SCAT5 is to be used for evaluating athletes aged 13 years and older. For children aged 12 years or younger, please use the Child SCAT5.

Preseason SCAT5 baseline testing can be useful for interpreting post-injury test scores, but is not required for that purpose.Detailed instructions for use of the SCAT5 are provided on page 7. Please read through these instructions carefully before testing the athlete. Brief verbal instructions for each test are given in italics. The only equipment required for the tester is a watch or timer.

Recognise and Remove

A head impact by either a direct blow or indirect transmission of force can be associated with a serious and potentially fatal brain injury. If there are significant concerns, including any of the red flags listed in Box 1, then activation of emergency procedures and urgent transport to the nearest hospital should be arranged.

Key points

- Any athlete with suspected concussion should be REMOVED FROM PLAY, medically assessed and monitored for deterioration. No athlete diagnosed with concussion should be returned to play on the day of injury.
- If an athlete is suspected of having a concussion and medical personnel are not immediately available, the athlete should be referred to a medical facility for urgent assessment.
- Athletes with suspected concussion should not drink alcohol, use recreational drugs and should not drive a motor vehicle until cleared to do so by a medical professional.
- Concussion signs and symptoms evolve over time and it is important to consider repeat evaluation in the assessment of concussion.
- The diagnosis of a concussion is a clinical judgment, made by a medical professional. The SCAT5 should NOT be used by itself to make, or exclude, the diagnosis of concussion. An athlete may have a concussion even if their SCAT5 is "normal".

Remember:

- The basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Do not attempt to move the athlete (other than that required for airway management) unless trained to do so.
- Assessment for a spinal cord injury is a critical part of the initial on-field assessment.
- Do not remove a helmet or any other equipment unless trained to do so safely.

Davis GA, *et al. Br J Sports Med* 2017;**0**:1–8. doi:10.1136/bjsports-2017-097506SCAT5

1

IMMEDIATE OR ON-FIELD ASSESSMENT

The following elements should be assessed for all athletes who are suspected of having a concussion prior to proceeding to the neurocognitive assessment and ideally should be done on-field after the first first aid / emergency care priorities are completed.

If any of the "Red Flags" or observable signs are noted after a direct or indirect blow to the head, the athlete should be immediately and safely removed from participation and evaluated by a physician or licensed healthcare professional.

Consideration of transportation to a medical facility should be at the discretion of the physician or licensed healthcare professional.

The GCS is important as a standard measure for all patients and can be done serially if necessary in the event of deterioration in conscious state. The Maddocks questions and cervical spine exam are critical steps of the immediate assessment; however, these do not need to be done serially.

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner:

Date: _____

STEP 1: RED FLAGS

RED FLAGS:

- **Neck pain or tenderness**
- **Double vision**
- **Weakness or tingling/ burning in arms or legs**
- **Severe or increasing headache**
- **Seizure or convulsion**
- **Loss of consciousness**
- **Deteriorating conscious state**
- **Vomiting**
- **Increasingly restless, agitated or combative**

STEP 2: OBSERVABLE SIGNS

Witnessed ☐ Observed on Video ☐

Lying motionless on the playing surface	Y	N
Balance / gait difficulties / motor incoordination: stumbling, slow / laboured movements	Y	N
Disorientation or confusion, or an inability to respond appropriately to questions	Y	N
Blank or vacant look	Y	N
Facial injury after head trauma	Y	N

STEP 3: MEMORY ASSESSMENT MADDOCKS QUESTIONS[2]

"I am going to ask you a few questions, please listen carefully and give your best effort. First, tell me what happened?"

Mark Y for correct answer / N for incorrect

What venue are we at today?	Y	N
Which half is it now?	Y	N
Who scored last in this match?	Y	N
What team did you play last week / game?	Y	N
Did your team win the last game?	Y	N

Note: Appropriate sport-specific questions may be substituted.

STEP 4: EXAMINATION GLASGOW COMA SCALE (GCS)[3]

Time of assessment			
Date of assessment			
Best eye response (E)			
No eye opening	1	1	1
Eye opening in response to pain	2	2	2
Eye opening to speech	3	3	3
Eyes opening spontaneously	4	4	4
Best verbal response (V)			
No verbal response	1	1	1
Incomprehensible sounds	2	2	2
Inappropriate words	3	3	3
Confused	4	4	4
Oriented	5	5	5
Best motor response (M)			
No motor response	1	1	1
Extension to pain	2	2	2
Abnormal flexion to pain	3	3	3
Flexion / Withdrawal to pain	4	4	4
Localizes to pain	5	5	5
Obeys commands	6	6	6
Glasgow Coma score (E + V + M)			

CERVICAL SPINE ASSESSMENT

Does the athlete report that their neck is pain free at rest?	Y	N
If there is NO neck pain at rest, does the athlete have a full range of ACTIVE pain free movement?	Y	N
Is the limb strength and sensation normal?	Y	N

In a patient who is not lucid or fully conscious, a cervical spine injury should be assumed until proven otherwise.

Davis GA, *et al. Br J Sports Med* 2017;**0**:1–8. doi:10.1136/bjsports-2017-097506SCAT5

OFFICE OR OFF-FIELD ASSESSMENT

Please note that the neurocognitive assessment should be done in a distraction-free environment with the athlete in a resting state.

STEP 1: ATHLETE BACKGROUND

Sport / team / school: _____

Date / time of injury: _____

Years of education completed: _____

Age: _____

Gender: M / F / Other

Dominant hand: left / neither / right

How many diagnosed concussions has the athlete had in the past?: _____

When was the most recent concussion?: _____

How long was the recovery (time to being cleared to play) from the most recent concussion?: _____ (days)

Has the athlete ever been:

Hospitalized for a head injury?	Yes	No
Diagnosed / treated for headache disorder or migraines?	Yes	No
Diagnosed with a learning disability / dyslexia?	Yes	No
Diagnosed with ADD / ADHD?	Yes	No
Diagnosed with depression, anxiety or other psychiatric disorder?	Yes	No

Current medications? If yes, please list:

_____

_____

_____

_____

_____

Name: _____

DOB: _____

Address:

ID number: _____

Examiner: _____

Date: _____

2

STEP 2: SYMPTOM EVALUATION

The athlete should be given the symptom form and asked to read this instruction paragraph out loud then complete the symptom scale. For the baseline assessment, the athlete should rate his/her symptoms based on how he/she typically feels and for the post injury assessment the athlete should rate their symptoms at this point in time.

Please Check: ☐ **Baseline** ☐ **Post Injury**

Please hand the form to the athlete

	none	mild		moderate		severe	
Headache	0	1	2	3	4	5	6
"Pressure in head"	0	1	2	3	4	5	6
Neck Pain	0	1	2	3	4	5	6
Nausea or vomiting	0	1	2	3	4	5	6
Dizziness	0	1	2	3	4	5	6
Blurred vision	0	1	2	3	4	5	6
Balance problems	0	1	2	3	4	5	6
Sensitivity to light	0	1	2	3	4	5	6
Sensitivity to noise	0	1	2	3	4	5	6
Feeling slowed down	0	1	2	3	4	5	6
Feeling like "in a fog"	0	1	2	3	4	5	6
"Don't feel right"	0	1	2	3	4	5	6
Difficulty concentrating	0	1	2	3	4	5	6
Difficulty remembering	0	1	2	3	4	5	6
Fatigue or low energy	0	1	2	3	4	5	6
Confusion	0	1	2	3	4	5	6
Drowsiness	0	1	2	3	4	5	6
More emotional	0	1	2	3	4	5	6
Irritability	0	1	2	3	4	5	6
Sadness	0	1	2	3	4	5	6
Nervous or Anxious	0	1	2	3	4	5	6
Trouble falling asleep (if applicable)	0	1	2	3	4	5	6
Total number of symptoms:							of 22
Symptom severity score:							of 132
Do your symptoms get worse with physical activity?						Y	N
Do your symptoms get worse with mental activity?						Y	N
If 100% is feeling perfectly normal, what percent of normal do you feel?							

If not 100%, why?

_____

_____

_____

Please hand form back to examiner

Davis GA, *et al. Br J Sports Med* 2017;**0**:1–8. doi:10.1136/bjsports-2017-097506SCAT5

3

STEP 3: COGNITIVE SCREENING

Standardised Assessment of Concussion (SAC)[4]

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

ORIENTATION

What month is it?	0	1
What is the date today?	0	1
What is the day of the week?	0	1
What year is it?	0	1
What time is it right now? (within 1 hour)	0	1
Orientation score		of 5

IMMEDIATE MEMORY

The Immediate Memory component can be completed using the traditional 5-word per trial list or optionally using 10-words per trial to minimise any ceiling effect. All 3 trials must be administered irrespective of the number correct on the first trial. Administer at the rate of one word per second.

Please choose EITHER the 5 or 10 word list groups and circle the specific word list chosen for this test.

I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order. For Trials 2 & 3: I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before.

List	Alternate 5 word lists					Score (of 5) Trial 1	Trial 2	Trial 3
A	Finger	Penny	Blanket	Lemon	Insect			
B	Candle	Paper	Sugar	Sandwich	Wagon			
C	Baby	Monkey	Perfume	Sunset	Iron			
D	Elbow	Apple	Carpet	Saddle	Bubble			
E	Jacket	Arrow	Pepper	Cotton	Movie			
F	Dollar	Honey	Mirror	Saddle	Anchor			
					Immediate Memory Score			of 15
					Time that last trial was completed			

List	Alternate 10 word lists					Score (of 10) Trial 1	Trial 2	Trial 3
G	Finger Candle	Penny Paper	Blanket Sugar	Lemon Sandwich	Insect Wagon			
H	Baby Elbow	Monkey Apple	Perfume Carpet	Sunset Saddle	Iron Bubble			
I	Jacket Dollar	Arrow Honey	Pepper Mirror	Cotton Saddle	Movie Anchor			
					Immediate Memory Score			of 30
					Time that last trial was completed			

CONCENTRATION

DIGITS BACKWARDS

Please circle the Digit list chosen (A, B, C, D, E, F). Administer at the rate of one digit per second reading DOWN the selected column.

I am going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7.

Concentration Number Lists (circle one)					
List A	**List B**	**List C**			
4-9-3	5-2-6	1-4-2	Y	N	0
6-2-9	4-1-5	6-5-8	Y	N	1
3-8-1-4	1-7-9-5	6-8-3-1	Y	N	0
3-2-7-9	4-9-6-8	3-4-8-1	Y	N	1
6 2 9 7 1	4 8 5 2 7	4 9 1 5 3	Y	N	0
1-5-2-8-6	6-1-8-4-3	5-8-2-5-1	Y	N	1
7-1-8-4-6-2	3-5-1-9-6-4	3-7-6-3-1-9	Y	N	0
5-3-9-1-4-8	7-2-4-8-5-6	9-2-6-5-1-4	Y	N	1
List D	**List E**	**List F**			
7-8-2	3-8-2	2-7-1	Y	N	0
9-2-6	5-1-8	4-7-9	Y	N	1
4-1-8-3	2-7-9-3	1-6-3-3	Y	N	0
9 7 2 3	2 1 6 9	3 9 2 4	Y	N	1
1-7-9-2-6	4-1-8-6-9	2-4-7-5-8	Y	N	0
4-1-7-5-2	9-4-1-7-5	8-3-9-6-4	Y	N	1
2-6-4-8-1-7	5-9-7-3-8-2	5-8-6-2-4-9	Y	N	0
8-4-1-9-3-5	1-2-7-9-3-8	3-1-7-8-2-6	Y	N	1
		Digits Score:			of 4

MONTHS IN REVERSE ORDER

Now tell me the months of the year in reverse order. Start with the last month and go backward. So you'll say December, November. Go ahead.

Dec - Nov - Oct - Sept - Aug - Jul - Jun - May - Apr - Mar - Feb - Jan	0 1
Months Score	of 1
Concentration Total Score (Digits + Months)	of 5

Davis GA, *et al. Br J Sports Med* 2017;**0**:1–8. doi:10.1136/bjsports-2017-097506SCAT5

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STEP 4: NEUROLOGICAL SCREEN

See the instruction sheet (page 7) for details of test administration and scoring of the tests.

Can the patient read aloud (e.g. symptom check-list) and follow instructions without difficulty?	Y	N
Does the patient have a full range of pain-free PASSIVE cervical spine movement?	Y	N
Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision?	Y	N
Can the patient perform the finger nose coordination test normally?	Y	N
Can the patient perform tandem gait normally?	Y	N

BALANCE EXAMINATION

Modified Balance Error Scoring System (mBESS) testing[5]

Which foot was tested (i.e. which is the non-dominant foot) ☐ Left ☐ Right

Testing surface (hard floor, field, etc.) _____

Footwear (shoes, barefoot, braces, tape, etc.) _____

Condition	Errors
Double leg stance	of 10
Single leg stance (non-dominant foot)	of 10
Tandem stance (non-dominant foot at the back)	of 10
Total Errors	of 30

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

5

STEP 5: DELAYED RECALL:

The delayed recall should be performed after 5 minutes have elapsed since the end of the Immediate Recall section. Score 1 pt for each correct response

Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.

Time Started

Please record each word correctly recalled. Total score equals number of words recalled.

_____

_____

_____

Total number of words recalled accurately: of 5 or of 10

6

STEP 6: DECISION

Domain	Date & time of assessment:		
Symptom number (of 22)			
Symptom severity score (of 132)			
Orientation (of 5)			
Immediate memory	of 15 of 30	of 15 of 30	of 15 of 30
Concentration (of 5)			
Neuro exam	Normal Abnormal	Normal Abnormal	Normal Abnormal
Balance errors (of 30)			
Delayed Recall	of 5 of 10	of 5 of 10	of 5 of 10

Date and time of injury: _____

If the athlete is known to you prior to their injury, are they different from their usual self?
☐ **Yes** ☐ **No** ☐ **Unsure** ☐ **Not Applicable**
(If different, describe why in the clinical notes section)

Concussion Diagnosed?
☐ **Yes** ☐ **No** ☐ **Unsure** ☐ **Not Applicable**

If re-testing, has the athlete improved?
☐ **Yes** ☐ **No** ☐ **Unsure** ☐ **Not Applicable**

I am a physician or licensed healthcare professional and I have personally administered or supervised the administration of this SCAT5.

Signature: _____

Name: _____

Title: _____

Registration number (if applicable): _____

Date: _____

SCORING ON THE SCAT5 SHOULD NOT BE USED AS A STAND-ALONE METHOD TO DIAGNOSE CONCUSSION, MEASURE RECOVERY OR MAKE DECISIONS ABOUT AN ATHLETE'S READINESS TO RETURN TO COMPETITION AFTER CONCUSSION.

Davis GA, *et al*. *Br J Sports Med* 2017;0:1–8. doi:10.1136/bjsports-2017-097506SCAT5

Lexington Christian Academy Sports Medicine

Meet the Team Physicians

Dr. Wallace Huff – **Orthopaedics** – Bluegrass Orthopaedics
Orthopedic surgeon Dr. Huff has been in practice for 18 years and with Bluegrass Orthopaedics for 8 years.

Dr. Huff grew up in Blacksburg, Virginia and attended Hampden-Sydney College. While in college, he was a member of the football team and a triple major in Biology, Biochemistry and Spanish. After college, Dr. Huff spent a year of graduate studies in physiology at Virginia Commonwealth University and then completed 4 years of medical school at Eastern Virginia Medical School. Following medical school, Dr. Huff completed 7 years of Orthopaedic Residency and Fellowship at the University of Virginia in Charlottesville.

Dr. Huff is board certified by the American Board of Orthopaedic Surgery with added qualifications in Sports Medicine. He serves as a team physician for several local high schools and colleges. He has hospital affiliations with St. Joseph East and Baptist Health.

Dr. Owen McGonigle- Orthopedics- Bluegrass Orthopaedics
Dr. Owen McGonigle was born and raised in a suburb of Boston, MA. He completed his undergraduate degree at the University of Notre Dame. After graduation, he returned to Boston where he earned his medical degree from Tufts University School of Medicine in 2010 and then completed his five year orthopedic residency through the Tufts Affiliated Orthopaedic Residency Program in 2015. During his time in residency he developed a passion for sports medicine and treating athletes of all ages. After completing residency, Dr. McGonigle elected to proceed with further education as a sports medicine physician and traveled to Birmingham, AL for advanced training in arthroscopic reconstructive procedures and sports medicine at the American Sports Medical Institute. While there, he had the opportunity to learn under some of the foremost leaders in the field.

In his free time, Dr. McGonigle enjoys playing tennis and spending time with his wife and three children.

Lexington Christian Academy Sports Medicine

Important Phone Numbers

Lexington Christian Academy High School…….…… (859) 422-5701

Lexington Christian Academy Middle School…….…… (859) 422-5702

Lexington Christian Academy Athletic Department…… (859) 422-5753

Athletic Director…….……. (859) 422-5766

Lexington Christian Academy Athletic Trainer (Cameron Deckett)…….....(402) 415-7148

Lexington Christian Academy Athletic Trainer (Andrew Carlson) …….……..... (859) 361-6965

*Many of the individuals you may wish to speak with are not always available at all times during the day to take your call. If you are not able to reach the person when you call, please leave a message on their voicemail or with the school receptionist. Your call will be returned as soon as possible.