Cromwell High School Athletic Emergency Action Plan

(Revised August, 2021)

By Keenan Love, ATC, LAT

Cromwell High School Athletic Emergency Action Plan

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Overview of the Emergency Action Plan

Emergencies (life and non-life threatening) situations may arise during athletic practices and competitions. Prompt and safe handling of the emergency situation is necessary for the protection of the athlete and helps provide the best possible care.

Emergency Action Plan (EAP) preparation and safety of the athletes begins with the athletic trainers, training in basic first aid, CPR and AED certification for all coaches, emergency procedures before, during and after an event or practice, management of personnel (emergency and non-emergency), and equipment and materials. Hopefully through training, careful screening of the athletes, coverage of athletic events, safe practice and training techniques some situations can be avoided and when they do occur the situation will be handled safely. Not all injuries are considered emergencies; the EAP will cover procedures for reporting non-emergency injuries to the athletic trainers. This plan will serve as a guideline for the management of emergency as well as non-emergency situations at Cromwell High School, Cromwell Connecticut.

Being prepared is of the utmost importance in successful management of any emergency. It is crucial that all members of the Athletic Department and emergency personal take ownership and responsibility for this Emergency Action Plan. This plan will be revised as venues are changed or added, additional emergency equipment is added, and additional personnel are added. Yearly review and situational practice of this plan will ensure that all members are adequately trained and prepared for an emergency. The Emergency Action Plan should serve as a skeleton of personnel, roles, and communication, but should not in any way limit a provider's reasonable variance from this plan in order to manage an emergency appropriately.

Athletic Trainer Vision Statement

The vision for the Athletic Trainer at Cromwell High School is to help ensure that the athletes enjoy a safe and happy playing career. We strive to give quality care to all Cromwell High School athletes out on the practice and game fields each and every time. The Athletic Trainers strive to add to the community of Cromwell High School, and promote quality from all members of the sports medicine team.

Athletic Trainer Mission Statement

"Athletic training is practiced by athletic trainers, health care professionals who collaborate with physicians to optimize activity and participation of patients and clients. Athletic training encompasses the prevention, diagnosis, and intervention of emergency, acute, and chronic medical conditions involving impairment, functional limitations, and disabilities. (http://nata.org/athletic-training)"

Select Physical Therapy Mission Statement

The Mission of Select Medical Corporation/Select Physical Therapy is to provide exceptional patient care experience that promotes healing and recovery in a compassionate environment.

Select Medical Corporation Core Values

- We deliver superior quality in all that we do.
- We treat others as we would like to be treated.
- We are results oriented and achieve our objectives.
- We are team players.
- We are resourceful in overcoming obstacles.

Referenced from www.selectmedicalcorp.com/about/mission-values

Communication of Emergency and Non-Emergency Injuries:

Timely activation and effective communication is vital to the successful management of any emergency or non-emergency. It is important that each member of the emergency response team be familiar with methods of emergency communication.

1. **Athletic Trainer**
    a. Emergency
        i. Athletic trainer and Athletic Director will be notified of any athletic emergency and non-emergency situation
        ii. Athletic trainer will notify emergency services if the situation calls for activation of EMS
        iii. If the Athletic Trainer is unable to call, a coach will be delegated this responsibility
        iv. Other emergency personnel will help with crowd control or assist as needed depending on the situation.
        v. Parents will be notified by either Athletic Trainer or coach of situation
    b. Non-Emergency
        i. If possible the Athletic Trainer will be notified to take care of this situation
        ii. If qualified, the Coach can take care of non-emergencies if an Athletic Trainer is not present.
        iii. If Coach or other qualified personnel take care of a non-emergency situation, an Athletic Trainer should be notified in a timely manner
2. **Student Athletic Trainer (If applicable)**
    a. Emergency (Athletic Trainer Present)
        i. Support Athletic Trainer in the needs of caring for the athlete
        ii. Keep the crowd under control and assist the Athletic Trainer
        iii. Have one student athletic trainer or coach meet the EMS at the door or entrance to guide EMS to the injury scene
    b. Non-emergency

i. Support the Athletic Trainer in the needs of caring for the athlete

3. Coaches

a. Emergency (Athletic Trainer Present)

i. Support Athletic Trainer in the needs of caring for the athlete

ii. Keep the crowd under control and assist the Athletic Trainer

iii. Have one coach meet the EMS at the door or entrance to guide EMS to the injury scene

iv. Make sure the parents have been notified of the situation by either the Athletic Trainer or coach

v. If athlete needs to be transported by EMS to hospital, either the parent should be meeting them at the hospital or a coach should be accompanying the athlete

b. Non-emergency

i. If the athlete requires transport not via EMS to hospital or Physician, a parent should transport the athlete

1. **No Coaches or Students will transport athletes for injuries. If parent is unavailable and immediate care is needed then 911/EMS should be contacted**

4. Administration

i. Support Athletic Trainer in the needs of caring for the athlete

ii. Keep the crowd under control and assist the Athletic Trainer

Contact Phone Numbers

• **Athletic Trainer:** Keenan Love	860.729.4174 (cell)
• **Director of Athletics:** Kelly Maher	860.632-4841
	860.613.3900 (office)
• **Nurse:** Leslie Knell	860.632.4841 x 24911
• **Principal:** Andrew Kuckel	860.632.4841 x 24904
• **Team Physician:** Dr. Bob Carangelo (OA of Hartford)	860.597.6856 (cell)
• **Select PT Center Manager:** Rachel Presnell-Reck	860.235.7651 (cell)
	860.632.1792 (clinic)

Emergency Equipment

Appropriate emergency equipment is located in close proximity to the athletic trainers for competitions and practices. Personal protective equipment (PPE) and CPR masks are carried with the athletic trainers and in coach's medical kits (gloves and CPR masks) while at a practice or competition. Additional emergency equipment is contained in the athletic training room or on the golf cart and cervical collar are located in the athletic training room for indoor events, and taken outdoors for practices and competitions in accordance with the possible risk of injury. All coaches and athletic training staff should be familiar with the location of the AED(s).

1. EMS
2. AED
3. Vacuum Splints
4. PPE
5. CPR Masks/Bag Valve Mask
6. Cold Water Emersion Tub
7. Cervical Collar
8. Facemask removal tools

Emergency Medical Services

Emergency Medical Services (EMS) will be expected to bring their own equipment to the scene. Depending on the situation, a backboard, a cervical collar, a gurney, and other devices will be employed to tend to the athlete. Athletic Trainers will be the first to help the EMS as needed. Coaches may be asked to help with equipment under the supervision of EMS.

AED Triage Plan

Purpose: To establish a plan for location of the fixed and portable AED's that are housed on the Cromwell High School campus. One fixed AED is located inside the school. It is located in the school's main entrance lobby. If you walk through the front doors, and proceed toward the gym, AED is located in the wall to the right before you enter the hallway. A portable AED is kept with the athletic trainer and is stored either in the athletic training room (during the winter season) or on the golfcart in the shed (during the fall and spring seasons). This plan is for utilization of the AED's that are maintained by the athletic training staff (portable) and nurses (fixed).

Personnel: Certified Athletic Trainers will be responsible for ensuring that the portable AED is incorporated into the sideline equipment according to this triage/priority plan.

Rationale: The AED has been shown to be invaluable in emergency medicine and has been shown to be effective in treating cardiac arrhythmias caused by various mechanisms.

Cardiac contusion has been recognized as an arrhythmia that can be successfully treated with and AED. This injury has the highest risk of occurrence in softball and baseball. Cardiac arrhythmias are also linked to the non-athletic population, such as referees and bystanders at athletic events. Other sudden cardiac events can occur in the athletic population without warning signs in what are considered otherwise healthy athletes. The AED has come to be recognized as part of the athletic trainers sideline equipment. The plan below is written so that this piece of equipment is located at the location where it can possible make the most impact.

Plan: The athletic trainer will be in possession of the portable AED. The athletic trainer will consider the above scenarios where an AED may be needed. The following factors should be taken into account when determining where the Athletic Trainer will be with this valuable resource:

1) Nature of event, e.g. impact vs. non-impact risk
2) Number of participants and bystanders
3) Environmental conditions, i.e. lightning, heat, cold
4) Number and location of other athletic events occurring at the same time
5) Proximity to fixed AED's
6) On-campus vs. off campus events

The athletic trainer should use his or her best judgment when determining where to place the AED's when multiple events require it, using the above considerations and the guidelines below.

1) The AED should be located outdoors when one or more outdoor events (practices or games) are occurring.
2) The best location may be on the golf cart so that it can be quickly transported to the necessary location.

Portable AED

Defibtech Lifeline AED

Locations: This AED is always with the Athletic Trainer; either in the athletic training room or at the venue/event with the Athletic Trainer.

Fixed AED

Defibtech Lifeline AED

Location: This AED is always kept on the right wall of the main entrance lobby in the wall mounted storage container.

Vacuum Splints

Vacuum splints are used for the immobilization of an injury to an extremity. They will be used if a fracture or break in a bone is deemed unstable for transportation. The vacuum splints are in the red storage bag and are stored on the golf cart (fall and spring seasons) or on the bottom of the med cart in the athletic training room (winter season).

Personal Protection Equipment

Personal Protection Equipment (PPE) includes gloves, and other barrier devices used in treating an athlete's injury. They will be worn when treating an athlete, and when there are biological hazards. Each coach's medical kit along with the athletic Trainers medical kit has gloves. The athletic training room has extra gloves and other barrier devices.

CPR Masks/Bag Mask Valve

CPR Masks and bag mask valve are used during CPR and rescue breathing. They are used to protect the person giving and receiving CPR and rescue breathing from biological hazards. Barriers are located in the coaches medical kits and the athletic trainers medical kit. The bag valve mask is kept with the AED either in the athletic training room(winter season) or on the golf cart(fall and spring season).

Cold Water Emersion Tub

A cold-water emersion tub is used when treating heat related illnesses when the core body temperature needs to be decreased. The tub will be kept in the boys locker room and will be filled with ice and water whenever high temperature/humidity occurs.

Cervical Collar

A cervical collar is used when a cervical neck injury has occurred and immobilization is needed for the injury. It will be kept on the golf cart (fall and spring season) or the athletic training room (winter season).

Facemask removal tool (Trainer's Angels and Screw Driver)

Facemask removal tools are used when a facemask or helmet needs to be removed due to an injury. These tools are kept in the athletic trainer's medical kit.

Emergency Personnel:

In almost every instance, a certified athletic trainer will be on site for home practices and competitions and would be the primary emergency care provider. If these personnel are not on-site, a coach will be the first responder and will have access to emergency communication as outlined by the venue plan.

Emergency Management Team Personnel

- Athletic Trainer
- Student Ath. Trainer (if applicable)
- Coach
- EMS/EMT
- Athletic Administration
- Team Physician (if present)

Roles of the Emergency Management Team

- **The first role** of the team is immediate care of the injured or ill athlete. The most qualified personnel on the scene will assume this role. This will include basic and advanced CPR and first aid techniques.

- **The second role** in an emergency is the activation of Emergency Medical Services. This should be done as soon as the situation is deemed an emergency or life-threatening event. The person responsible for immediate care of the athlete will designate one person to fill this role. The person chosen to perform this duty should be someone who is calm under stressful situations, and can speak clearly. This person needs to have a thorough understanding of the location of the emergency and type of emergency. Information to be provided to EMS is listed on the Venue Specific Emergency Plan.

- **The third role** is retrieving the proper emergency equipment. This may be done by anyone on the emergency team, but should be someone who is familiar with the location of emergency supplies and the types of emergency supplies. The coaching staff will be instructed where emergency equipment is located within the athletic training rooms ideally in a non-emergent setting.

- **The fourth role** of the team is direction of the EMS team to the emergency scene. This may or may not be the same person who was responsible for activation of EMS. This person should be able to move quickly, and have an understanding of emergency access to the facility. Emergency access routes are listed on the Venue Specific Emergency Plan.

Role of the Athletic Trainer:

The athlete trainer will access the scene and injured person/athlete and determine the proper course of treatment. They will also make sure to activate EMS/EMT if the situation requires. If need be, the athletic trainer will give the responsibility to another member of the emergency management team who should follow the instructions written above in the second role. Athletic Trainers will treat the athlete's injury until EMS services arrive. The athletic trainer will report the situation to the EMS personnel who arrive on scene. Then assist as needed to help the EMS in treating the athlete.

Student Athletic Trainer (If Applicable)

The student athletic trainer will always be in direct supervision of the athletic trainer and will help assist in the treatment of the athlete by helping retrieve the equipment necessary for treatment. Also, they may have the responsibility of calling and activating EMS/EMT services. For instructions on how to speak to these services, follow the above written instructions for second role. A student athletic trainer may need to meet the EMS outside the door or location to lead them to the injured athlete if the athletic trainer is unable to do so.

Coaches

The coach will help assist in the treatment of the athlete by helping retrieve the equipment necessary for treatment. Also, coaches may have the responsibility of calling and activating EMS/EMT services. For instructions on how to speak to these services, follow the above written instructions for second role. A coach will need to meet the EMS outside the door or location to lead them to the injured athlete if the athletic trainer is unable to do so. Coaches will also have the responsibility of keeping the players and parent away from the scene.

EMS and EMT

Emergency Medical Services and Emergency Medical Transport will arrive if the situation arises where their presences is required. They bring their own equipment to the scene and may use the equipment we have on hand. All roles will be helping EMS and EMT if they request assistance in treating the athlete. They will treat on scene and on route to the hospital.

Athletic Administration

Administration will be notified if a medical emergency occurs. They will help control the scene keeping parents and other athletes away from the scene and activate EMS/EMT services if needed.

Inclement Weather and Fire Safety

The keys to lightning safety are education and prevention. Education begins with learning appropriate lightning safety tips. Prevention of lightning injuries or casualties should begin long before any outdoor event. This section below will outline lightning safety terminology, procedures, and decision-making.

Outdoor Event Procedures- Cromwell Public Schools Responsibilities

Prior to Outdoor Events

1. Establish a chain of command that identifies who is to make the call to remove individuals from a field. One person should be selected as the lead contact and

should be selected by the head of the organization hosting the event. This can be the individual who reserves the field or a coach at the event.

2. Name a designated weather watcher (A person who actively looks for the signs of threatening weather and notifies the chain of command if severe weather becomes dangerous) on game/practice day. This person can be named earlier in the year for the entire year or on the day of the event by the hosting organization. See section below titled "Evaluating a Lightning Event" for information about determining if an event should be cancelled.

3. Have a means of monitoring local weather forecasts and warnings.

4. Designate a safe shelter for each venue.

Evaluating a Lightning Event

Timing of Lightning: Lightning strikes to individuals are rare but can be deadly. It is also the most consistent and significant weather hazard that may affect athletic participation. The National Severe Storms Laboratory recommends that athletic participation cease when lightning is detected within 6 miles. For our purposes this will be indicated by either a 30 second flash-to-bang count as assessed by an ATC (certified athletic trainer). This information will be supplemented by monitoring of the Weather Channel or the Weather Bug "spark" app as well as local news reports for storm warnings. The decision to delay practices or games will be announced by cell phone or face to face to each sport that is training/competing outdoors. Flash-to-Bang: To use the flash-to-bang method, begin counting when sighting a lightning flash. Counting is stopped when the associated bang (thunder) is heard. Divide this count by five to determine the distance to the lightning flash (in miles). For example, a flash-to-bang count of thirty seconds equates to a distance of six miles. Lightning has struck from as far away as 10 miles from the storm center. "If you hear it, if you see it, flee it" Postpone or suspend activity if a thunderstorm appears imminent before or during an activity or contest, (irrespective of whether lightning is seen or thunder is heard) until the hazard has passed. Sign of imminent thunderstorm activity are darkening clouds, high winds, and thunder or lightning activity.

This information will be supplemented by monitoring of the Weather Channel, weather bug app as well as local new reports for storm warnings. The decision to delay practices or games will be announced by cell phone or face to face to each sport that is training/competing outdoors.

Day of Event

1. For thunder, use the flash-to-bang count to determine when it is time to go to safety. By the time the flash-to-bang count approaches thirty seconds all individuals should be already inside a safe structure.

2. If activities are to be suspended, the hosting organization will contact visitors (i.e., teams or

groups from other schools) to leave the field and seek shelter (see "Actions of Teams below).

3. Make the following announcement to spectators via loudspeaker or megaphone:

> "Attention ladies and gentlemen, unsafe weather conditions have been detected. The game will be suspended until all lightning activity has passed. The National Severe Storm Laboratory recommends that during thunderstorms people should take shelter inside the school. If you do not chose to go inside the school, then go inside your vehicle with a solid metal roof as a safe alternative. If you are unsure of your appropriateness of your automobile, please seek shelter inside immediately.

4. Team point of contact will ensure field is clear.

5. Once activities have been suspended, wait at least thirty minutes following the last sound of thunder or lightning flash prior to resuming an activity or returning outdoors.

Actions of Teams: When the decision has been made to delay participation, teams will report to a safe structure. A safe structure defined as "any building normally occupied or frequently used by people, i.e., a building with plumbing and/or electrical wiring that acts to electrically ground the structure". Teams will remain within these structures until thirty minutes after the last bolt of lightning has passed or the last sound of thunder was heard.

National Athletic Trainers Association Position on Lightning Safety

National Athletic Trainers' Association Position Statement: Lightning Safety for Athletics and Recreation

"The National Athletic Trainers' Association recommends a proactive approach to lightning safety, including the implementation of a lightning-safety policy that identifies safe locations for shelter from the lightning hazard. Further components of this policy are monitoring local weather forecasts, designating a weather watcher, and establishing a chain of command. Additionally, a flash-to-bang count of 30 seconds or less should be used as a minimal determinant of when to suspend activities. Waiting 30 minutes or longer after the last flash of lightning or sound of thunder is recommended before athletic or recreational activities are resumed. Lightning safety strategies include avoiding shelter under trees, avoiding open fields and spaces, and suspending the use of land-line telephones during thunderstorms. Also outlined in this document are the prehospital care guidelines for triaging and treating lightning-strike victims. It is important to evaluate victims quickly for apnea, asystole, hypothermia, shock, fractures, and burns. Cardiopulmonary resuscitation is effective in resuscitating pulseless victims of lightning strike. Maintenance of cardiopulmonary resuscitation and first-aid certification should be required of all persons involved in sports and recreational activities." (*Journal of Athletic Training* 2000; 35(4):471–477)

Off Site Storm and Emergency Shelters

- Pierson Park Football Field
    - All athletes should report to the locker room and spectators should report to the bathrooms/concessions at the entrance of the parking lot.
- TPC River Highlands Golf Course
    - All athletes and spectators should return to the club house or return to their cars
- Watrous Park Tennis Courts
    - All athletes and spectators should return to their cars.
- In the case of a Tornado all athletes and spectators need to enter the closest building with electrical or plumbing, staying away from doors or windows and get on your hands and knees, head to the wall with your hands covering your head and neck.

On Site Storm and Emergency Shelters

- Inside Events: All athletes and spectators should remain inside the school building.
- Outside Events: All athletes and spectators should return to the closest entrance of Cromwell High School and stay inside. If the school is closed athletes and spectators should return to their buses or cars.
- In the case of a Tornado all athletes and spectators need to enter the closest building with electrical or plumbing, staying away from doors or windows and get on your hands and knees, head to the wall with your hands covering your head and neck.

Fire Emergencies

Evacuation of Inside On or off Campus Locations: Exit the space/room through the nearest exit/emergency exit as quickly as possible. Once the building in exited move as far away from the building as possible

Evacuation of Outside Venues: Move as far away from the fire as quickly as possible to a safe place, i.e. car, bus, school or building.

Emergencies Involving Non-athletes

1. Stabilize the person and treat wounds
2. Call emergency services as needed **- 911** –
3. Contact Administrator

Emergencies for Cromwell HS Athletics

Outside Venues on Cromwell High School's Campus

(Football, Soccer, Lacrosse, Cross Country, Baseball, Softball, Tennis, Golf and Track practice or games)

Emergency Personnel:

- Certified Athletic Trainer (ATC) on site for all games and most practices
- CPR/First Aid Trained Coaches
- Athletic Administrator
- Municipal EMS Crew (with ambulance) on site for all varsity Football games.
- Team Physician on site for all home Football games.

Emergency Communication:

- Certified Athletic Trainer will have cell phone on at all times.

Emergency Equipment:

- Supplies will be located on the golf cart (CHS) or treatment table (Pierson Park)
  - Biohazard container/supplies
  - CPR Mask/Bag Mask Valve
  - Vacuum Splints
  - Facemask Removal Equipment for football
  - AED
  - Cervical Collar

- Additional Athletic Training emergency supplies available in athletic training room

Ambulance Access/Directions: 1 Donald Harris Drive, Cromwell, CT 06416 (Map- page 22)

- Pull into school entrance and proceed down the hill to the rear parking lot. As you enter the rear parking lot:
- Tennis Courts: Located to the right next to parking lot, fenced in.
- Varsity Grass Field/Track: To the far right of the parking lot, adjacent to the tennis courts. There is a gate in the fence, to get ambulance into track pull through gate, take a quick right and through the track gate.
- **All Grass Fields can be accessed through parking lot gate marked on map. Once into fields:**
- Softball field: Drive straight down paved path, field is in back right behind track.
- JV game/practice fields: Both fields are side by side to the left once inside gate.
- Baseball field: Drive down paved path, baseball field is in the back left corner of grounds.

- Football Practice Field: Drive down path, field is in back center between baseball and softball fields.

Inside Venues on Cromwell High School Campus

(Basketball, Volleyball, Indoor Track, Weight Room, Cheerleading)

Emergency Personnel:

- Certified Athletic Trainer (ATC) on site for all games and most practices
- CPR/First Aid Trained Coaches
- Athletic Administrator.

Emergency Communication:

- Certified Athletic Trainer will have cell phone on him at all times. This is the preferred method of contact at all times.

Emergency Equipment:

- Supplies will be located on the golf cart (during the fall and spring seasons) and in the Athletic Training Room (during the winter season)
  - Biohazard container/supplies
  - CPR Mask/Bag Mask Valve
  - Vacuum Splints
  - Facemask Removal Equipment for football
  - AED
  - Cervical Collar

- Additional Athletic Training emergency supplies available in athletic training room

Ambulance Access/Directions: 1 Donald Harris Drive, Cromwell, CT 06416 (Map Page 22)

- Main Gymnasium: Enter through athletic entrance into athletic lobby. Double doors to your right enters right into the gym.
- Weight Room: From the street drive down the hill. Before the main entrance of the school, turn left to get to the left side of the school. Weight room is second door on the right. Brown, has a garage door next to it.
- Cafeteria (Cheerleading Practice): Enter through main entrance of school. Take left once in main lobby and down the hall to the cafe. Exterior entrance, locate large glass windows and outdoor seating area. Two doors located on either side of windows.

Events That Occur off Campus

(Football Games at Pierson Park, Golf matches at TPC River Highlands, Tennis Matches at Watrous Park, Winter Cheerleading practice at Woodside Intermediate School)

Emergency Personnel:

- Certified Athletic Trainer is not on site for practices
- Certified Athletic Trainers will Cover all Hockey Games and Most Indian Ledge Games only
- CPR/First Aid Trained Coaches
- Athletic Administration

Emergency Communication:

- Certified Athletic Trainer will have cell phone at all times.

Emergency Equipment:

- Supplies being Carried by Athletic Trainer
  - Biohazard container/supplies
  - CPR Mask/Bag Valve Mask
  - Facemask Removal Equipment for Ice Hockey
- Supplies that **MAY** be Carried by Athletic Trainer
  - Vacuum Splints
  - AED
  - Cervical Collar

Ambulance Access/Directions to Pierson Park Located on West street next to police dept.

- Drive down West street and pull into main park entrance. Enter the field left or right of concession/bathroom building.

Ambulance Access/Directions to TPC River Highlands Golf Course- 1 Golf Club Rd. Cromwell, CT

- Pull into Course main entrance and look for clubhouse signs. If emergency is on course have representative from course lead you out with a golf cart.

Ambulance Access/Directions to Watrous Park- 41 West Street Cromwell, CT

- Pull into the park entrance, go past parking lot to side lot and pull up next to maintenance building.

Ambulance Access/Directions to Woodside Intermediate School- 30 Woodside Road, Cromwell, CT

- Pull into main entrance of school and follow entrance road to the turn around in front of the school/front of parking lot. Double gym doors will be visible straight ahead on school. They are a direct entrance to the gymnasium.

Roles of First Responders:

1. Immediate care of the injured or ill athlete:
    a. Primary survey:
        i. Survey the scene for hazards to first responder
        ii. Check for Airway. If not breathing, reposition head and listen again. If still no breath, perform chin-lift maneuver and give two breaths via mouth to mask. If breaths do not go in, reposition head and attempt two more.
        iii. Check for pulse at carotid, brachial or radial pulse points. If no pulse present, begin chest compressions at a rate of 100 per minute at a ratio of 30 compressions to 2 breaths. If AED is available, use immediately.
        iv. If breath and pulse are present, continue to monitor both until EMS arrives.
    b. Secondary survey:
        i. Evaluate level of responsiveness, determine if athlete is alert and oriented, responds to verbal stimuli, responds to pain, or is unresponsive.
        ii. Perform a brief physical exam, looking for open wounds, deformity, or tenderness.
2. Emergency Equipment Retrieval:
    a. All med Kits and ATCs will have CPR mask, Facemask Removal Equipment and biohazard protection on person. Additional emergency equipment available on sidelines or with EMS.
3. Activation of Emergency Medical System (EMS)
    a. EMS Crew will be signaled for assistance during varsity football games.
    b. In the event that the EMS crew is called away during the varsity football game or emergency occurs during a game:
        i. From campus land line phone: **Call 911**
        ii. From wireless phone or other venues: **911**
        iii. Give the following information:
            1. Emergency is at Cromwell High School
            2. Age, sex of injured individual
            3. Condition of injured; breathing/not breathing, conscious or unconscious, basic description of injury.
            4. First aid treatment being given; CPR, etc.
            5. Relevant medical history or any other information requested by dispatcher
            6. Hang up last.
    c. After EMS has been notified, make sure there is assistance with crowd control.

4. Direction of EMS to scene
    a. Ambulance access – Which field/room the emergency is at and which gate/door they should enter
    b. Designate an individual to flag down EMS crew and direct them to the proper gates and scene.
    c. Scene Control: Limit scene to first aid providers and medical personnel. Move bystander In the case of a Tornado all athletes and spectators need to enter the closest building with electrical or plumbing, staying away from doors or windows and get on your hands and knees, head to the wall with your hands covering your head and neck.rs away from area to allow EMS clear access.

Appendix A:

Adult CPR

■ Sizes up the scene and forms an initial impression.
{ Is the scene safe to enter? { What happened? { How many people are involved? { What is my initial impression about the nature of the person's illness or injury? Does the person have any life-threatening conditions, such as severe, life-threatening bleeding? { Is anyone else available to help?

IF scene is safe and there is no life-threatening bleeding, but the person appears to be unresponsive."

■ Uses appropriate PPE. Puts on gloves.

■ Checks person for responsiveness and breathing. Shouts to get person's attention, using person's name if known. If person does not respond, taps person's shoulder and shouts again while checking for normal breathing.

If there is no response and the person is not breathing."

■ Tells bystander to call 9-1-1 and get the AED and fi rst aid kit. Points and speaks out loud.

■ Gives 30 compressions. Places hands on the center of the chest, keeping arms as straight as possible with shoulders directly over hands. Compresses the chest at least 2 inches at a rate of 100–120 compressions per minute. Lets the chest return to its normal position before pushing down again.

■ Gives 2 rescue breaths. Places CPR breathing barrier over the person's nose and mouth. Opens airway to a past-neutral position using head-tilt/chin-lift technique. Pinches nose shut and forms a seal over person's mouth. Takes a normal breath and blows into the person's mouth for about 1 second, causing chest to rise. Takes a breath, makes a seal, then gives second rescue breath.

■ Repeats cycle of 30 compressions and 2 rescue breaths. Instructor: "EMS personnel have arrived and taken over."

Appendix B:

Cromwell High School Exertional Heat Illness Policy & Procedures

Policy Area: Environmental Safety	**Subject:** Exertional Heat Illness
Title of Policy: Exertional Heat illness	**Page Number:** 25 – 33 of Emergency Action Plan
Effective Date: 1/1/2020	**Approved By:** Keenan Love – Athletic Trainer Gillian Hanson – Head Nurse Kelly Maher – Athletic Director Andrew Kuckel – Principal
Approved Date: TBD	
Revision Date: N/A	

I. Purpose of policy:

Exertional heat illness includes exercise-associated muscle cramps, heat syncope, heat exhaustion, and exertional heat stroke (EHS). Current best practice guidelines suggest that the risk of exertional heat injuries can be minimized with heat acclimatization and diligent attention to monitoring individuals participating in activities that place them at a higher risk for these types of injuries.[1] In the event an athlete sustains a heat illness, immediate and proper treatment is needed.

National governing bodies, such as the National Federations of High School Associations, National Collegiate Athletic Association (NCAA) and numerous state athletic/activity associations, have published guidelines for the prevention, monitoring and treatment of exertional heat illnesses. In addition, national authorities such as the National Athletic Trainers' Association and the Korey Stringer Institute have published research to support best practices in this area. The development of the organization's heat acclimatization guidelines will be based on the current best practice documents.

[1]Casa DJ, Demartini JK, Bergeron MF, et al. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. *Journal of Athletic Training*. 2015;50(9):986-1000.

II. Policy statement:

This policy describes the best practice procedures for the prevention, monitoring, and when necessary, the treatment of exertional heat illnesses for students/athletes, faculty and staff of **Cromwell High School**.

This policy will be a living, working document that is continually reviewed and updated yearly as the organization and our community changes.

III. Definitions:

- *Acclimatization* – The process of gradually increasing the intensity of activity in a progressive manner that improves the body's ability to adapt to and tolerate exercise in the heat.
- *Wet Bulb Globe Temperature* – The WBGT is a measurement tool that uses ambient temperature, relative humidity, wind, and solar radiation from the sun to get a comprehensive measure that can be used to monitor environmental conditions during exercise. WBGT is different than heat index, as it is a more comprehensive measurement of environmental heat stress on the body.
- *Non-Practice Activities* – Activities that include meetings, injury treatment, and film study.
- *Practice* – the period of time that a student-athlete engages in coach-supervised, school approved sport or conditioning related-activity. Practice time includes from the time the players report to the field until they leave.
- *Walk Through* – A period of time where players are reviewing positional strategy and rehearsing plays. Players do not experience contact and thus they do not wear equipment and the intensity of the activity is minimal often involving walking. This period of time shall last no more than one hour. It is not considered part of the practice time regulation. It may not involve conditioning or weight room activities. Players may not wear protective equipment during the walk through.
- *Recovery Time* – This period of time is defined as non-activity time outside of practices or games. NO ACTIVITY, including non-practice activity, can occur during this time. Proper recovery should occur in an air-conditioned facility, when possible and usually is a minimum of 3 hours in duration.
- *Rest Breaks* – This period of time occurs during practice, and is a non-activity time that is in a 'cool zone' out of direct sunlight.
- *Exertional Heat Stroke* (EHS)– Defined as having a rectal temperature over 104°F-105°F (40.5°C), and central nervous system dysfunction (e.g. irrational behavior, confusion, irritability, emotional instability, altered consciousness, collapse, coma, dizzy, etc.).
- *Cooling Zone*- An area out of direct sunlight with adequate air flow to assist in cooling. A cold-water or ice tub and ice towels should be available to immerse or soak a patient with suspected heat illness This may be outdoors or indoors depending on proximity to field.
- *Qualified Health Care Professional (QHP*) - As defined by the American Medical Association (AMA), "is an individual who is qualified by education, training, licensure/regulation (when applicable), and facility privileging (when applicable) who performs a professional service within his/her scope of practice and independently reports that professional service."
- *Hypohydration*- (reduced hydration status) is a deficit of body water that is caused by acute or chronic dehydration.

- *Central Nervous System dysfunction*- includes any sign or symptom that the central nervous system is not working properly, including: dizziness, drowsiness, irrational behavior, confusion, irritability, emotional instability, hysteria, apathy, aggressiveness, delirium, disorientation, staggering, seizures, loss of consciousness, coma, etc.

IV. Scope

This policy applies to all staff members (e.g., QHPs, athletic administrators, coaches, strength and conditioning staff, school administrators, advisors) of **Cromwell High School** who are associated with activities where heat illness poses a risk, including but not limited to, outdoor and indoor activities where high temperature and specifically high humidity environmental risks are present (e.g., athletics, intramurals, course instruction, marching band).

V. Procedures

Prevention

Pre-participation history and physical exam

1. A thorough medical history will be gathered (history of heat illness, sickle cell trait/disease, etc.)
2. Individuals with risk factors will be identified and counseled (see table below):

Risk Factors for Heat Illness	
Intrinsic	***Strategies to Minimize Risk***
High intensity exercise	Gradually phase in exercise and conditioning
Fever or illness	Monitor and remove at risk athletes as necessary
Dehydration	Educate coaches/athletes on proper hydration Provide adequate access to water
Overweight/obesity	Gradually phase in exercise and conditioning
Lack of heat acclimatization	Follow heat acclimatization program
Medications (antihistamines, diuretics, ADHD drugs)	Monitor and remove at risk athletes as necessary
Skin disorder (sunburn or malaria rubra)	Monitor athletes closely
Predisposing medical conditions	Monitor and remove at risk athletes as necessary
Extrinsic	***Strategies to Minimize Risk***
High ambient temperature, solar radiation or humidity	Avoid exercise in hotter parts of the day
Heavy gear or equipment	Gradually introduce equipment
Poor practice design	Educate coaches regarding strategies to minimize risk

3. When applicable the Athletic Trainer or persons responsible will be notified of individuals with pre-existing conditions that place the individual at risk of exertional heat illness
4. As necessary, coaches are notified of individuals at higher risk

Environmental Monitoring and Activity Modification/Cancellation

1. Environmental monitoring will occur utilizing a **General Heat Stress Monitor - WBGT Digital Psychrometer**
2. Environmental monitoring will occur any time it is warm outside (i.e. over 80°F)
3. Environmental monitoring and activity modifications may be necessary for certain types of indoor facilities
4. Monitoring of WBGT will occur every 30 minutes beginning at the scheduled practice time

    a. **Keenan Love - Athletic Trainer will monitor the WBGT**
    b. **Keenan Love - Athletic Trainer will make the modification/cancelation of activity**
        i. **Kelly Maher – Athletic Director will support ATC's decision**
    c. **WBGT readings will be done on field of where practices or games will be occurring**
    d. All environmental monitoring will be recorded **and stored via picture and documented in ATC's heat modification binder**
5. Modifications will be made in accordance with the best practice guidelines for our region. We are in **category 2**, therefore we will follow the activity guidelines for that region.
    a. *To find what region/category your school is in, please read the Grundstein et al. Regional heat safety thresholds for athletes in the contiguous United States. Applied Geography, 2015 manuscript (https://ksi.uconn.edu/wp-content/uploads/sites/1222/2018/08/RegionalWBGT_2015_AppliedGeography.pdf)*
    b. *The table below shows the specific modifications that will be made for each flag zone (green, yellow, orange, red, black).*
    c. *Delete the categories that do not apply to you for a clean table*
6. Modifications are meant to be fluid, meaning if the environment gets more oppressive, the modifications get stricter. However, if environmental conditions improve, the modifications will be in line with the new environmental conditions

Cat 2	Activity Guidelines
< 79.7	Normal Activities – Provide at least three separate rest breaks each hour with a minimum duration of 3 min each during the workout.
79.9 - 84.6	Use discretion for intense or prolonged exercise; Provide at least three separate rest breaks each hour with a minimum duration of 4 min each.
84.7 - 87.6	Maximum practice time is 2 h. For Football: players are restricted to helmet, shoulder pads, and shorts during practice. If the WBGT rises to this level during practice, players may continue to work out wearing football pants without changing to shorts. For All Sports: Provide at least four separate rest breaks each hour with a minimum duration of 4 min each.
87.8 - 89.6	Maximum practice time is 1 h. For Football: No protective equipment may be worn during practice, and there may be no conditioning activities. For All Sports: There must be 20 min of rest breaks distributed throughout the hour of practice.

Acclimatization

1. This acclimatization protocol applies to ALL sports.
2. Days 1 through 5 of the heat acclimatization period consists of the first 5 days of formal practice. During this time, athletes may not participate in more than 1 practice per day.
    A. If a practice is interrupted by inclement weather or heat restrictions, the practice will recommence once conditions are deemed safe. Total practice time will not exceed 3 hours in a single day.
    B. A 1-hour maximum walk-through is permitted during days 1–5 of the heat acclimatization period. However, a 3-hour recovery period will be inserted between the practice and walk-through (or vice versa).

3. During days 1–2 of the heat acclimatization period, in sports requiring helmets or shoulder pads, a helmet will be the only protective equipment permitted (goalies, as in the case of field hockey and related sports, will not wear full protective gear or perform activities that would require protective equipment).
4. During days 3–5, only helmets and shoulder pads will be worn. Beginning on day 6, all protective equipment may be worn and full contact may begin.
    A. Football only: On days 3–5, contact with blocking sleds and tackling dummies may be initiated.
    B. Full-contact sports: 100% live contact drills will begin no earlier than day 6.
5. Beginning no earlier than day 6 and continuing through day 14, double-practice days must be followed by a single-practice day. On single-practice days, 1 walk-through is permitted, separated from the practice by at least 3 hours of continuous rest. When a double-practice day is followed by a rest day, another double-practice day is permitted after the rest day.
6. On a double-practice day, neither practice will exceed 3 hours in duration and student-athletes will not participate in more than 5 total hours of practice. Warm-up, stretching, cool-down, walk-through, conditioning, and weight room activities are included as part of the practice time.
    A. The 2 practices will be separated by at least 3 continuous hours of rest in a cool environment.
7. Because the risk of exertional heat illnesses during the preseason heat acclimatization period is high, we strongly recommend that an athletic trainer be on site before, during, and after all practices.

Hydration

1. Hypohydration represents a continuum from both a clinical perspective (mild = 1% to 5%, moderate= 5% to 10%, and severe= 10% body mass deficit) and an athletic perspective (mild= 1-3%, moderate=3-5% and severe=5% deficit).

Assessing Hydration Status:

2. Athletes will be strongly encouraged to weigh themselves before and after practice as well as before going to bed and when they wake up. Trying to keep a consistent
3. Everyone will be aware of the main signs and symptoms of hypohydration;
    a. Thirst
    b. Dark colored urine (similar to apple juice)
    c. Acute body weight loss >2%
4. Hypohydration is a predisposing factor for exertional sickling and those with sickle cell trait or disease will receive targeted education and hydration monitoring.

Fluid Replacement:

5. Water breaks will be provided based on the policy on environmental-condition guidelines using work to rest ratios.
    a. Water or other palatable fluids will be easily accessible before, during and after activity. Cool and flavored beverages are often preferred by athletes and will be made available when possible for optimal rehydration.

6. When possible, diet and rehydration beverages will include sufficient sodium (enough to replace losses) to prevent imbalances that may occur as a result of sweat and urine losses.
7. When needed, individualized hydration plans will be developed and sweat rate (see equation below)
    a. Environment, acclimatization state, body size, exercise duration, exercise intensity, and individual fluid preference and tolerance will be considered when calculating sweat rate.
    b. Sweat Rate Equation:
        - Sweat loss (L) = Body mass before exercise (kg) – Body mass after exercise (kg) + (Volume of fluid consumed during exercise [L]) – (Urine volume, if any [L])
        - Sweat rate (L/h) = Sweat loss (L) / Exercise duration (h)
8. When possible, fluid replacement will be optimized to prevent decreased performance. Core temp is 0.2°C to 0.25°C higher and heart rate is 3-5 bpm higher for every 1% increase in body mass loss.

Treatment in the event of hypohydration (potential medical emergency if severe):

9. If moderate (2%-5%) or severe (greater than 5%) hypohydration is identified, oral fluids will be administered.
10. If severe hypohydration is present with vomiting or diarrhea, EMS will be activated

Monitoring

1. Monitoring of student-athletes safety will be continuous during any physical activity.
2. Athletic trainers, coaches, administrators and other athletics personnel will be educated on the signs and symptoms of exertional heat illness (see training/retraining in section 6).
    a. These signs and symptoms include (but are not limited to) the table below

Rectal temp greater than 104 (40°C) at time of incident.	Rapid pulse, low blood pressure, quick breathing
Headache	Dehydration, dry mouth, thirst
Confusion or just look “out of it”	Decreasing performance or weakness
Disorientation or dizziness	Profuse sweating
Altered consciousness, coma	Collapse, staggering or sluggish feeling
Nausea or vomiting	Muscle cramps, loss of muscle function/balance, walk dys.
Diarrhea	Irrational behavior, irritability, emotional instability

    b. Coaches and administrators will be educated annually
        i. See training/retraining in section 6

Treatment in the event of an exertional heat stroke (medical emergency)

Recognition

1. Any athlete with signs of central nervous system dysfunction during exercise in the heat should be suspected to be suffering from EHS until a rectal temperature confirms or refutes this diagnosis.
2. Patients with suspected EHS will have a temperature obtained via rectal thermometer by a QHP.

a. Rectal thermometers may include a traditional thermometer (e.g. small, discrete), electronic thermometers with a rigid end (e.g. hand-held digital thermometer) or a thermistor (e.g. long, flexible thermistor)
b. It is important to reiterate that during and following intense exercise in the heat, temporal, aural, oral, skin, axillary and tympanic temperature are <u>not</u> valid and should **never** be utilized in evaluating a potential exertional heat stroke

3. *If a QHP is not available/present, cooling will begin immediately and EMS will be called.*
4. Steps to obtain a rectal temperature:
    a. Remove the athlete from the playing field, to a shaded area.
    b. Drape the patient accordingly (with towels and sheets) for privacy.
        i. Note: It is encouraged that the medical professional ask a coach or other adult to witness the temperature measurement.
    c. Position the patient on their side with their top knee and hip flexed forward.
    d. Make sure the thermometer is cleaned with isopropyl alcohol.
    e. Make sure the probe is plugged into the thermometer (when applicable).
    f. Turn the thermometer on.
    g. Insert the probe 10-15cm past the anal sphincter.
    h. If you meet resistance while inserting, stop and remove the probe and then try again.
    i. Replace the patients clothing.
    j. Temperature duration
        i. For use of a traditional thermometer or a hand-held digital thermometer, insert the probe for initial temperature. If temperature is at or above 104°F, initiate cooling protocol. See directions for continued monitoring in cooling protocol.
        ii. For use of a flexible thermistor, leave the probe in for the duration of the treatment.
    k. After the treatment has ended, remove the probe gently.

Cooling

1. If rectal temperature is between 102°-104°F, initiate cooling via rotating cold wet towels.
2. If rectal temperature is at or above 104°F, initiate the exertional heat stroke treatment protocol and contact EMS services immediately.
3. The patient must be moved to a cooling zone, begin appropriate treatment and continuously monitor the patient.
    a. For use of a traditional thermometer or a hand-held digital thermometer (any thermometer with a rigid end), obtain initial temperature, remove device, and calculate cooling rate (approximately 1°F every 3-5 minutes when using cold water immersion). When the QHP believes the temperature is within a safe range, remove patient from tub, and re-insert probe to confirm temperature. If temperature is not within the safe range, cooling will continue. Repeat procedure until temperature is confirmed to be within the safe range.

b. For use of a flexible thermistor, keep the probe in for the duration of treatment.

4. Excess clothing shall be removed to aid cooling.
    a. If removal of clothing and/or equipment would cause delays of 5+ minutes, do not remove and initiate cooling.
5. Place patient in a cold-water (35-59°F) tub up to the neck.
    a. Wrap a towel across the chest and beneath both arms to prevent the athlete from sliding into the tub.
    b. Ice shall cover the surface of the water at all times.
    c. Water shall be continuously and vigorously stirred to maximize cooling.
    d. An ice-cold towel will be placed over the head/neck and rewet and replaced every 2 minutes.
    e. Cooling shall cease when body temperature reaches 102°F.
6. Cold Water Immersion (CWI) Tub
    a. Must be set up:
        i. **Fall: Outside of football storage unit next to ECS. ECS rear spout will be used to fill.**
        ii. **Spring: Outside of boy's locker room. Spout in locker room will be used.**
    b. Proper set-up includes:
        i. A tub filled with water.
        ii. Two chests filled with ice next to the tub ready for treatment.
        iii. Available bed sheet or large towels.
        iv. Towels for placement over the head and neck.
        v. Completion of set-up within 5-10 minutes prior to the practice/competition/event site.
7. Cool First, Transport Second
    a. When a patient is diagnosed with EHS, the principle of Cool First, Transport Second will be used.
        i. Note: EMS should not transport the patient until they reach 102°F due to the inability to continue vigorous cooling in the ambulance

EMS

1. EMS must be called immediately if a patient is suspected of EHS.
2. HOWEVER, any patient with EHS must be **cooled FIRST and then transported via EMS.**
    a. This cool first transport second EAP protocol will be communicated/shared with EMS annually PRIOR to the first official sport practice at the school in accordance with the EAP policy and procedures.

Return to activity

Patients who have suffered an exertional heat illness must complete a rest period and obtain clearance from a physician before beginning a progression of physical activity under the supervision of a qualified medical professional. The following is the suggested protocol:

- Activity should first begin in a cool environment

- Once patient has shown success with exercise in a cool environment, patient should then complete the heat acclimatization protocol (above) for progression back into exercise in a warm environment.
- Body temperature monitoring may be recommended during the first 1-2 weeks for those returning from EHS episode.

The following personnel have been trained to ensure a safe participation environment for all individuals, coaches, employees and staff mentioned in the Scope section of this document, who are engaged in activities that could put them at risk of exertional heat injuries.

VI. Policy Approvals

The signatures below indicate approval of this policy. The signature(s) and date(s) encompass the entire document. This policy is effective for one year following the date written below.

Role: _____ Date: _____

Name (printed): _____ Signature: _____

Role: _____ Date: _____

Name (printed): _____ Signature: _____

Role: _____ Date: _____

Name (printed): _____ Signature: _____

Role: _____ Date: _____

Name (printed): _____ Signature: _____

Appendix C:

Official Statement: EMS Changes to Pre-hospital Care of the Athlete with Acute Cervical Spine Injury

NATA has recently become aware of significant change to protocols of Emergency Medical Response Services in some parts of the country. The change affects how EMS will be transporting patients to the Emergency Department. In many cases of suspected spine injury, EMS might not recommend immobilizing a patient to a spine board for transport. Rather, patients may be transported with a cervical collar only and secured directly to the stretcher for transport.1 EMS protocols may vary substantially between states and counties. Ultimately, state EMS regulatory agencies and individual EMS medical directors will determine the protocols that govern EMS personnel.

With this change there are many implications for athletic trainers, such as equipment removal. In some cases a spine board may still be used to transfer the patient from the ground to a stretcher then removed, but in other cases responders may use an alternative method of transfer (e.g., scoop stretcher, sheet-carry, lift, etc.). Protocols may still allow for use of an immobilization method using a vacuum mattress or padded spine board. Experts within the athletic training profession, including authors of the 2009 Position Statement, Acute Care of the C-spine Injured Athlete, are actively reviewing these changes, examining current recommendations and discussing short and long-term strategies for response.
In the interim, the NATA strongly urges ATs to:

- Contact local EMS provider(s) as soon as possible to professionally review, discuss and rehearse current protocols for immobilization and transfer of a suspected spine-injured athlete as recommended by their medical director and/or state agency, including equipment intensive patients.
- Update Emergency Action Plans if necessary and be prepared for all aspects of the plan.
- Keep in mind that the current NATA Position Statements include language that allows for full body immobilization using methods other than a long spine board (e.g., vacuum mattress) and for removal of the athletic equipment in the pre-hospital setting, depending on circumstance. Furthermore, expert consensus now suggests that, in some cases, pre-hospital removal of athletic equipment may be advised. This is based on recent research and changes to AHA/ARC guidelines which prioritize compressions and AED deployment over ventilations, both of which require access to the chest.
- Actively seek new evidence through advanced training, solicitation of expert advice and by remaining up-to-date on the latest scientific research in this important area.

Appendix D:

Clinical Considerations in the Management Protocol for the Spine-Injured Athlete: Transfer and Immobilization

FULL-BODY IMMOBILIZATION

To achieve full spinal immobilization during on-the-field management of an injury, patients are typically transferred and then secured to a long spine board. The task of moving a patient to a spine board can prove challenging, as the head and trunk must be moved as a unit. Spine boarding athletes may present additional challenges, from the size of the athlete to equipment considerations to athletic venue barriers or obstacles, such as spine boarding an athlete from a swimming pool, a pole-vault pit, or a gymnastics foam pit.

A variety of techniques exist to move and immobilize the injured athlete. Rescuers should use the technique that they have reviewed and rehearsed and are most comfortable with and, most importantly, that produces the least amount of spinal movement.

SELECTION OF APPROPRIATE TRANSFER AND SPINE-BOARDING TECHNIQUES

Supine Log-Roll Technique

When transferring an athlete found in the supine position to a spine board, the supine log-roll technique may be used. The rescuer in charge (rescuer 1) provides cervical spine stabilization. Ideally, 3 additional rescuers are positioned on 1 side of the athlete, with rescuer 2 at the shoulders and thorax, rescuer 3 at the hips, and rescuer 4 at the legs. Rescuer 5 is positioned on the opposite side of the athlete with the spine board. Rescuers 2 through 4 reach across the athlete and, on command from rescuer 1, carefully roll the athlete toward them while rescuer 5 positions the spine board at a 45 degree angle beneath the athlete. On command, rescuers 2 through 4 slowly lower the athlete as rescuer 5 controls the spine board. Throughout this process, rescuer 1 provides all commands while maintain- ing manual cervical spine immobilization. The supine log- roll technique may also be used for the athlete found in the side-lying position.

Prone Log-Roll Technique

When transferring an athlete found in the prone position to a spine board, the prone log-roll technique may be used. Two variations to this technique are the prone log-roll pull and prone log-roll push. In the prone log-roll pull, the rescuer in charge (rescuer 1) provides cervical spine stabilization, crossing his or her hands initially, so that when the roll is complete, the hands are uncrossed. Ideally, 3 additional rescuers are positioned on 1 side of the athlete, with rescuer 2 at the shoulders and thorax, rescuer 3 at the hips, and rescuer 4 at the legs. Rescuer 1 directs the other rescuers to position themselves on the appropriate side of the

athlete. In some instances, the athlete may be prone with the head turned to 1 side. In this case, rescuer 1 directs rescuers 2 through 4 to position themselves on the side opposite the athlete's face. Rescuer 5 is positioned on the same side as the other rescuers, holding the spine board at the feet of the athlete. Rescuers 2 through 4 reach across the athlete and, on command from rescuer 1, carefully roll the athlete by pulling toward them. When the athlete is pulled onto his or her side, rescuers 1 through 4 pause while rescuer 5 carefully slides the spine board between rescuers 2 through 4 and the athlete. On command, rescuers 2 through 4 slowly lower the athlete as rescuer 5 controls the spine board. Throughout this process, rescuer 1 provides all commands while maintaining manual cervical spine immobilization.

It may be difficult for rescuer 5 to slide the spine board between the athlete and rescuers 2 through 4 without touching each other's arms and possibly jeopardizing their hold on the athlete. To address this issue, an alternative technique is the prone log-roll push, shown in Figure 1.

Lift-and-Slide Technique

An alternative to the log roll is the lift-and-slide transfer technique. Variations include the 6–plus-person lift and the straddle lift and slide. In contrast to the log roll, in which the athlete is rolled to a side-lying position and the spine board is positioned beneath him or her, with the lift-and- slide technique the athlete is simply lifted off the ground to allow for spine board placement. The premise behind the lift-and-slide technique is that the work of lifting the athlete is handled efficiently by involving 4 to 7 rescuers. In addition, this technique avoids rolling the injured athlete over the arm, as well as over possibly bulky protective equipment, and, therefore, this technique may be extremely effective at minimizing structural interference that could result in unwanted spinal column movements.[72,73] The lift- and-slide technique may only be used for supine athletes, whereas a prone athlete must be log rolled for transfer to a spine board.

The 6–plus-person lift is shown in Figure 2. A disadvan- tage of this procedure is that it requires 6 additional rescuers.

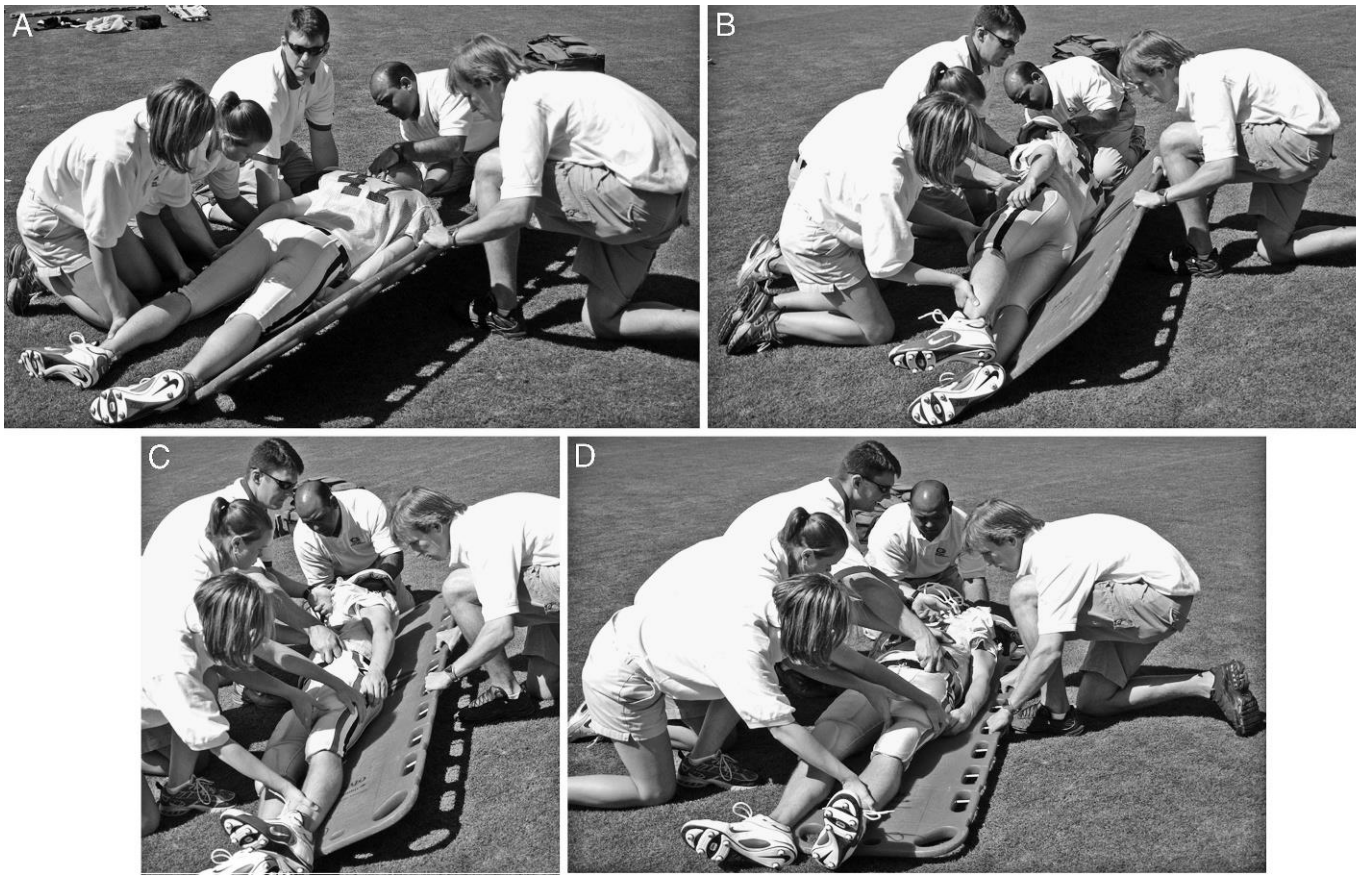

Figure 1. The prone log-roll push technique. A, Rescuer 1 provides cervical spine stabilization. Rescuers 2 through 4 are positioned on the side the athlete's head is facing. Rescuer 5 is on the opposite side, holding the spine board. B, Rescuers 2 through 4 reach across the athlete and, on command from rescuer 1, carefully roll the athlete away from them by pushing toward rescuer 5, who positions the spine board at a 45° angle beneath the athlete. C and D, Rescuers 2 through 4 slowly lower the athlete as rescuer 5 controls the spine board.

An alternative lift technique may be used with 3 rescuers who straddle the athlete rather than lifting from the side; this is referred to as the straddle lift and slide. With the straddle lift and slide, rescuer 1 provides cervical spine stabilization. Three additional rescuers straddle the athlete, with rescuer 2 at the upper torso, rescuer 3 at the hips and pelvis, and rescuer 4 at the legs. On command from rescuer 1, rescuers 2 through 4 lift the athlete approximately 6 inches (15.24 cm) off the ground while rescuer 5 slides the spine board beneath the athlete. On command, rescuers 2 through 4 slowly lower the athlete onto the spine board. Throughout this process, rescuer 1 provides all commands while maintaining cervical spine immobilization.

Other Alternatives for Transfer and Spine Boarding

Another alternative that may be used for transfer or full- body immobilization is the scoop stretcher. A stretcher that is hinged on both ends and has telescoping arms may be used to ''scoop'' the athlete without having to log roll or lift him or her. As with the lift-and-slide technique, the scoop stretcher may only be used on athletes in the supine position. With the scoop stretcher, the rescuer in charge (rescuer 1) provides cervical spine stabilization. Two additional rescuers, rescuers 2 and 3, position the stretcher. Rescuers 2 and 3 first adjust the length of the stretcher to the athlete using the telescoping arms. Because the stretcher is hinged at both ends, 2 different techniques

may be used. Rescuers 2 and 3 may open both hinges, separating the stretcher into 2 sections. Rescuer 2 positions the stretcher from one side, carefully sliding the stretcher beneath the athlete, while rescuer 3 does the same from the other side. They then work together to align the hinges and reconnect the scoop stretcher. An alternate technique is to open only one hinge and spread the scoop stretcher open in the shape of a ‘‘V,’’ position the stretcher at one end of the athlete, and then carefully close it, sliding the stretcher beneath the athlete and reconnecting the open hinge. The athlete may be secured to the scoop stretcher itself or, once the athlete is on the scoop stretcher, the lift-and-slide technique may be used. Rescuers raise the stretcher as a unit from both sides and slide a spine board beneath the scoop stretcher. The athlete may then be secured to the spine board. When using the scoop stretcher, rescuers should be aware that it may be difficult to close and secure the hinge at the top of the stretcher without interfering with rescuer 1’s maintenance of cervical spine stabilization. It may be necessary for a rescuer to assume cervical spine control from the front of the athlete for rescuer 1 to allow for the top hinge to be secured. Additionally, it may be difficult to close the hinge(s) on heavier athletes as a result of their weight or on athletes who are wearing protective gear, such as shoulder pads.

Another alternative used for transfer or spine boarding is vacuum immobilization. The vacuum-immobilization system is based upon the same principle as extremity vacuum splints.

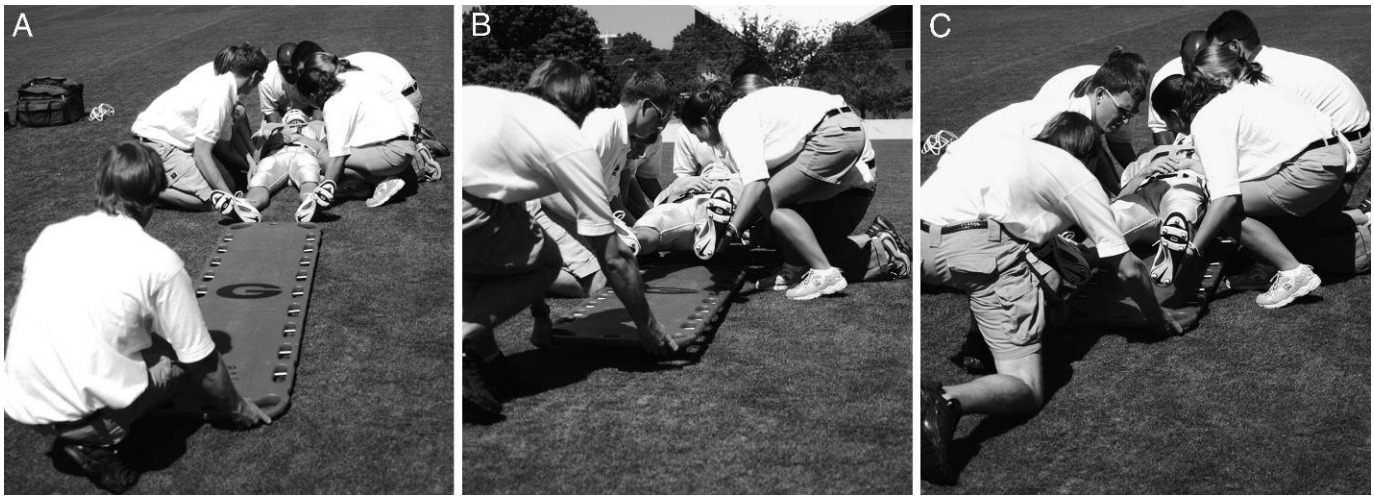

Figure 2. The 6–plus-person lift. A, Rescuer 1 provides cervical spine stabilization. Rescuers 2 through 4 are positioned on one side at the shoulders and thorax, hips, and legs, respectively; rescuers 5 through 7 are positioned similarly on the other side. Rescuer 8 is at the athlete's feet with the spine board. B, On command from rescuer 1, rescuers 2 through 7 lift the athlete approximately 6 inches off the ground, while rescuer 8 slides the spine board beneath the athlete. C, Rescuers 2 through 7 slowly lower the athlete onto the spine board.

Originally developed in Europe, the vacuum-immobilization systems for the spine are now available in the United States. The system is composed of a large nylon shell filled with tiny Styrofoam (The Dow Chemical Co, Midland, MI) beads. The system is spread out flat, and an air pump is used to withdraw air from the shell, making it semirigid. The athlete is then placed on the system, using either the log-roll or lift- and-slide technique. Air is pumped into the shell and the system conforms to the athlete. Then air is again withdrawn, creating a custom, form-fitted, full-body splint. Straps are built into the system to secure the athlete. An advantage of the vacuum-immobilization system is athlete comfort,[71] as a result of the softness of the Styrofoam bead shell and the custom fit, which protects areas of bony prominence (eg, scapula, pelvis) that may develop pain and ischemic injury from prolonged compression on a hard surface, such as a standard spine board. The system also provides support to contour areas, such as the lumbar spine, buttocks, and popliteal fossa. Disadvantages are the size of the system, which renders it cumbersome, and the semirigidity of the system. The lift-and-slide technique may be better suited for the vacuum-immobilization system's semirigidity; however, the large size of the system may make it difficult to slide between the rescuers on either side.

Another technique that may be used for transfer or spine boarding is a short-board system such as the Kendrick Extrication Device (KED; Ferno, Wilmington, OH). Traditionally used by emergency medical services person- nel for vehicle extrication, the short board may be placed

on a patient who is seated or has a flexed trunk. This technique may be useful in immobilizing athletes positioned awkwardly or where equipment barriers exist, such as in the gymnastics pit or pole-vault pit. A systematic review of prehospital spinal immobilization by Kwan and Bunn[165] showed a reduction in motion reported with the short-board technique compared with cervical-collar immobilization. With the short-board technique, rescuer 1 stabilizes the cervical spine from the front of the patient while rescuer 2 positions the short board behind the patient. Straps are used to secure the short board to the patient's chest, abdomen, and hip, and the last straps, with or without tape, secure the head to the board. Once immobilized with the short board, the patient may be extricated and then placed on and secured to a long spine board.

REPOSITIONING AFTER TRANSFER TO THE SPINE BOARD

In many cases, the athlete's position on the spine board after the initial spine-boarding procedure may not be ideal for securing him or her appropriately, particularly when using the log-roll technique. Therefore, it may be necessary to reposition the athlete to assure proper placement. After the initial spine-board placement, rescuer 1 assesses the athlete's overall position on the spine board. The athlete should never be moved perpendicular to the long axis of the board to avoid shearing and the possibility of spinal column movement. Instead, the athlete should be moved

Figure 3. Repositioning after transfer to the spine board. A, Rescuer 1 provides cervical spine stabilization. B, The other rescuers straddle the athlete and C, slide the athlete into position on command.

cephalad or caudad at an angle, depending on his or her position on the spine board. When repositioning, rescuer 1 provides specific commands: ''On the count of 3, we are going to slide the athlete up and to the right … ready … 1

… 2 … 3.'' The rescuers sliding the athlete may either straddle the athlete (Figure 3) or position themselves on both sides and slide from the sides. Throughout this process, rescuer 1 provides all commands while maintain- ing cervical spine immobilization.

Head Immobilization

A variety of head-immobilization options are available for securing the athlete to a spine board, including commercial devices, contoured helmet blocks, foam blocks, and towel rolls. Although once used extensively, sand bags are no longer recommended as head-immobilization devices because of their weight. If the spine board must be turned on its side, the sand bags will move the head laterally, compromising the cervical spine. Rescuers should select the head-immobilization technique with which they are most comfortable and be skilled in the use of that particular technique. *The head should always be the last part secured to the spine board*. Once the selected head-immobilization device stabilizes the head, either tape or hook-and-loop straps secure the head to the spine board. Two separate points of contact at the chin and the forehead[78] should be secured to prevent as much head and neck motion as possible. The tape or strap at the forehead should be placed at the level of the eyebrows to avoid slipping off the rounded top of the head. When using tape to secure the forehead, the rescuer applies the tape circumferentially for additional stability. The rescuer tears off a strip of tape approximately 4 ft (1.22 m) in length and ''shimmies'' the tape beneath the spine board, holding a tape end in each hand. One side of tape is pulled across the forehead at the level of the eyebrows, followed by the other side across the first piece (Figure 4). During this process, it may be necessary for a rescuer to assume cervical spine control from the front of the athlete for rescuer 1 to allow the head to be properly secured.

Types of Spine Boards and Full-Body Immobilization Devices

A variety of spine boards and full-body immobilization devices exist. The most commonly used device is the standard spine board. In the past, these boards were typically wood; however, most spine boards today are constructed of lighter fiberglass or a similar composite, offering increased strength and durability and easier cleaning, which is particularly important in light of bloodborne pathogens. Oversize spine boards to accom- modate larger athletes should be considered based upon the athletic population being covered.

Rigid spine boards may be equipped with nonabsorbent padding. A patient strapped to spine boards may be restrained for several hours throughout the hospital emergency department evaluation and diagnostic testing process. Areas of bony prominence (eg, scapula, pelvis) may develop pain and ischemic injury from prolonged compression on a hard surface. Padding may help to reduce this, making the athlete more comfortable.

Most spine boards are the traditional rectangular shape and have cutouts that serve both as handles and sites to secure

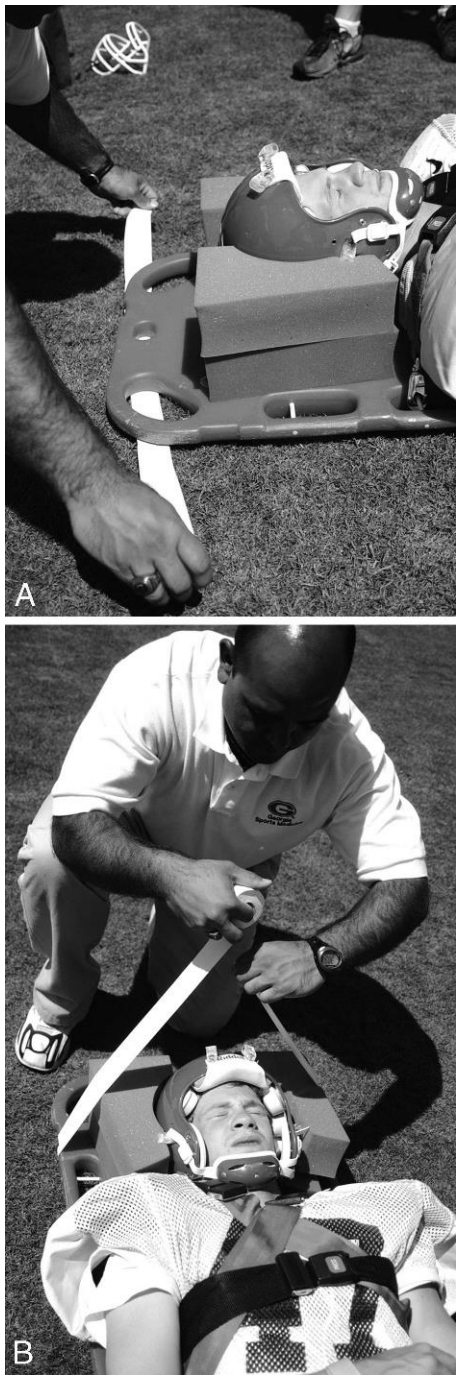

Figure 4. Head immobilization. A, Once the athlete is positioned properly, the rescuer ''shimmies'' a 4-ft (1.22-m) length of tape under the spine board. B, One side of the tape is pulled across the forehead at the level of the eyebrows, followed by the other side across the first piece.

straps. Some spine boards are contoured on the bottom with tapered edges to facilitate placing straps and hands into the cutouts, particularly when the spine board is on a soft surface, such as a grass field, on which the weight of the athlete can press the spine board into the ground (Figure 5).

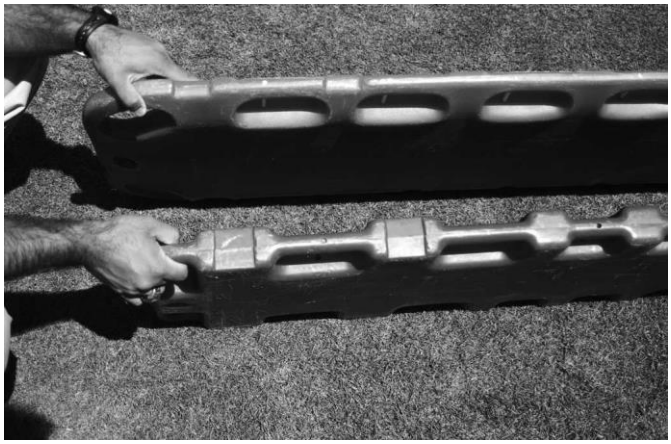

Figure 5. Long spine-board handle designs. The board in the left hand has a beveled bottom, whereas the board in the right hand has recessed handles.

with the spine board. This kit should contain necessary supplies, such as a head-immobilization device, cervical collar, face-mask removal tools for sports in which helmets are worn (ideally on the rescuer's person during competi- tion), straps to secure the athlete to the board, wrist straps to secure the athlete's hands together, tape, and various sizes of padding or toweling. In many cases, padding may be necessary for filling in gaps or spaces to maintain proper spinal column positioning.

Strapping Options and Techniques

Once the athlete is positioned on the spine board, securing with adequate strapping is essential to minimize excess movement during transport and transfers. A variety of strapping options exist, ranging from tape to the traditional 3-strap technique (chest, pelvis, and thighs), to spider straps to speed clips. When securing the athlete to the spine board, the arms should be kept free to facilitate a variety of diagnostic and treatment techniques. Once the torso is secured to the spine board, the hands may be placed together on top of the body using hook-and-loop wrist straps or tape.

In strapping the body to the spine board, the rescuers should use a technique to restrain the athlete as securely as possible. If the athlete vomits, which may occur with a closed head injury, the spine board may need to be turned to the side to allow airway clearance. Proper strapping will minimize lateral movement.

Rescuers should also consider strapping in terms of ambulance transport. With stopping and starting of the vehicle, the athlete may move axially or caudally on the board if not properly secured: such movement places additional stress on the cervical spine. To address this, 2 straps may be crossed in an ''X'' pattern below one axilla and across the body above the opposite shoulder; the process is repeated on the other side. Additionally, specifically placed strapping should be added to the torso to reduce lateral motion on a backboard.[166] A 7- strap system provides excellent stabilization on the spine board:

Straps 1 and 2: ''X'' at the chest and run across the shoulders

Strap 3: across chest

Straps 4 and 5: "X" across pelvis Strap 6: across mid-thighs

Strap 7: across mid-lower legs

MANAGING THE COMBATIVE ATHLETE

As a result of the mechanism of injury, some athletes with cervical spine injuries may have concurrent closed head injuries. In this situation, rescuers may encounter a combative athlete who resists immobilization techniques, whether consciously or reflexively. This creates a problem for the rescuers, who should be aware that attempts to manually restrain a patient's head against his or her will may increase the stresses placed upon the patient's cervical spine. Rescuers should attempt to calm the patient and minimize movement as much as possible based upon the individual circumstances.

Appendix B. Clinical Considerations in the Management Protocol for the Equipment- Laden Athlete With a Spine Injury

FACE-MASK REMOVAL

Combined-Tool Approach

In equipment-laden sports, the face mask is secured to the helmet via loop straps that are screwed into the shell of the helmet with a screw and T-nut configuration. This arrangement can vary in style or number both within and between different types of sports. When the face mask must be removed from the helmet, the tool and technique selected should be those that create the least head and neck motion, are the fastest and easiest to use, and that impose the lowest chance of failure. For football helmets, authors have reported that a screwdriver, or cordless screwdriver, is faster,[86,144,145] easier to use,[86] and creates less torque[145] and motion[86] at the head than many of the cutting tools commonly used to remove the face mask. However, screw removal can fail, and problems with the helmet hardware (screws, T-nuts), such as corrosion and rust, can cause the screw face to shred, allowing the T-nut to spin with the screw while turning or even to become so rusted as to fuse the hardware pieces together, preventing them from turning at all.[85] Therefore, a combined-tool approach provides the rescuer the added security of using a backup cutting tool, but only when necessary.

In describing the combined-tool approach to face-mask removal, we use the example of a football helmet face mask that is attached with 4 separate loop-strap attachments. We refer to the loop-strap locations under the earholes as the left side and right side loop strap or screw locations and the loop straps located at the forehead as the left top and right top loop strap or screw locations.

1. First attempt face-mask removal using a screwdriver.
    a. The 2 side loop straps should be removed first. The top loop straps are then removed. This order prevents the face mask from rotating down onto the athlete's face or throat. Once all the screws are withdrawn far enough that they are totally

removed from the T-nut holding the face mask in place on the underside of the helmet shell, the face mask is simply lifted away, usually with the loop straps still attached to the face mask.

b. Placing pressure on the underside of the loop strap with the thumb of the other hand while unscrewing can assist in separating the screw from the T-nut (Figure 6).
c. If, when attempting to remove the screws from the helmet, 1 or more screws cannot be unscrewed, skip to the next screw until all screws that can successfully be unscrewed are removed.

2. Use a backup cutting tool to cut away any remaining loop strap(s) (Figure 7).

a. Ensure that the cutting tool chosen will success- fully cut the loop straps of the helmets currently worn by the football team or teams being covered. Not all face-mask removal tools will remove all helmet or loop-strap combinations.[86] If the home- team athletic trainer is the primary caregiver for the visiting team, he or she should identify the equipment used by the visitors and have the appropriate removal tools available.
b. In some traditional helmets with standard loop straps, the face mask can be rotated to the side, leaving more of the loop strap exposed for easier access with the cutting tool. This technique will not work on all helmet models.
c. The proper technique for cutting loop straps should be used with the chosen removal tool. For example, the Trainers Angel removal tool differs significantly in its cutting mechanism from the FM Extractor. Removal tools often come with instructions for their use. These should be followed and the techniques practiced thoroughly.
d. Loop straps should be cut in such a way as to ensure that the face mask can easily be lifted away from the helmet without loop-strap remnants obstructing removal. Sometimes, more often with the top loop-strap locations, a complete-thickness cut can be made through the entire loop strap. In other cases, it may be necessary to cut a ''window'' in the loop strap to allow the face-mask bar to be easily extracted; depending on the type of loop strap, at least 2 cuts are required.
e. Practicing face-mask removal is extremelyimportant if cutting loop straps will be the chosen approach, as removing loop straps from face masks using cutting tools can be a difficult skill to perform.[86]

Fortunately, athletic trainers can do much to increase the chances that a screwdriver will be successful in removing a screw and the face mask from a helmet. Weather-related factors have less effect on successful face-mask removal using a screwdriver than other factors that are under human control.[85] With the use of corrosion-resistant hardware in the helmet, more regular equipment maintenance, and

Figure 6. Face-mask removal. Placing the thumb behind the top loop strap while unscrewing the screw allows the loop strap to be lifted away once the screw is separated from the T-nut on the underside of the helmet. Reprinted with permission from Gale SD, Decoster LC, Swartz EE. The combined tool approach for face mask removal during on-field conditions. *J Athl Train.* 2008;43(1):14–20.

annual reconditioning, the chances of all 4 screws being successfully removed from the helmet increase.

As helmet, face-mask, and tool designs change, so too may these recommendations. For example, a recently developed face-mask attachment system in football helmets incorpo- rates quick-release loop-strap attachments. To remove the loop straps, the quick-release mechanism is triggered by using the appropriately sized, pointed end of a tool to depress a button, which detaches the T-nut from the inside of the helmet (Figure 8). With any current or future developments in equipment and design, the goal for face-mask removal will always be to perform the task in an efficient manner in order to protect the athlete as much as possible during the management process and to do no further harm.

HELMET AND SHOULDER-PAD REMOVAL

Removal of either the helmet or shoulder pads may be necessary when such equipment prevents access to the airway or chest for primary life-support measures. Equip- ment removal may also be necessary if the helmet and shoulder pads do not maintain neutral cervical spine or

Figure 7. The backup cutting tool is used to cut away any remaining loop straps.

provide adequate immobilization of the head. Equipment design varies considerably, both among and within equipment-laden sports. This variability requires emergen- cy responders to familiarize themselves with the nuances inherent in individual helmet and shoulder-pad models. The following are general guidelines offered to facilitate an approach to helmet and shoulder-pad removal.

1. The chin strap is removed from the helmet. Cutting away the chin strap is preferable to unsnapping it to avoid unnecessary movement.
2. Cheek pads should be removed from helmets if they interfere with the ability to remove the helmet from the head. Not all cheek pads in all types of helmets interfere with the ability to remove the helmet, so this step can be skipped with certain helmets. However, whether this step is necessary should be determined in advance. The method for removing cheek pads may differ based upon the type of helmet:
    a. Some cheek pads are snapped into place and may be detached using a thin, rigid object, such as a tongue depressor, bite stick, or scissor tip.
    b. Some cheek pads are secured with hook-and-loop straps and may also be removed by sliding a thin, rigid object between the strap sections.
    c. Some cheek pads may require cutting with scissors for complete removal.
3. If the helmet contains air bladders, the air should be drained with a deflation needle or blade to loosen the fit of the helmet and facilitate removal.
4. Before helmet removal, cervical spine stabilization should be transferred from the rescuer at the head to another rescuer, who assumes cervical spine control from the front. The rescuer at the head then grasps the helmet at the sides and gently removes it from the athlete. Slightly spreading the helmet from the sides and rotating the helmet up while sliding it off the head may facilitate removal. However, these tech- niques should be practiced in advance to ensure they enhance, rather than inhibit, helmet removal (Figure 9).
5. Once the helmet is removed, a cervical collar is placed on the athlete before the shoulder pads are removed. Padding may also need to be placed underneath the head to avoid dropping the head and cervical spine into extension.

Figure 8. Quick-release loop-strap attachments. A, The quick-release mechanism is triggered by depressing the button. B, The T-nut is then detached from the inside of the helmet.

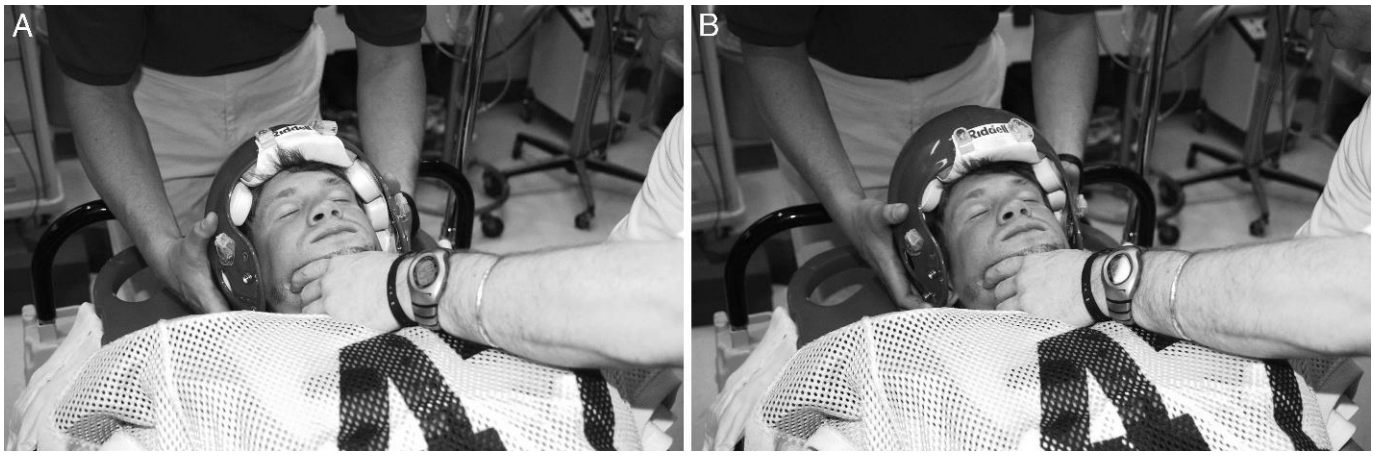

Figure 9. Helmet removal. A, Cervical spine stabilization is transferred from the rescuer at the athlete's head to another rescuer, who assumes control from the front. The rescuer at the head grasps the helmet at its sides and B and C, gently removes it from the athlete.

6. Any uniform top or jersey worn over the shoulder pads should be cut away before removing them. Using scissors, cut along the midline of the jersey, as well as out through each sleeve.
7. Cut through the strings or disconnect or cut through the plastic buckles in front of the shoulder pads.
8. Be aware of additional equipment that may be secured to the shoulder pads, such as rib pads or collars.
9. Remove the shoulder pads using one of the following techniques or a suitable alternative:

   a. A standard technique requires transfer of cervical spine control from the rescuer at the head to another rescuer, who assumes cervical spine control from the front. The rescuer at the head then carefully removes the shoulder pads by sliding them out from under the athlete.
   b. An alternative technique requires cutting the shoulder pads in the front and, if possible, in the back to split the pads into 2 sections. This technique does not require the helmet to be removed first but must be planned in advance, so that the cut in the back of the shoulder pads can be made during a log-roll maneuver. Once both sections of pads have been cut, simply pull apart from the sides while the rescuer at the head maintains cervical spine sta