

**RUB SOME
DIRT ON IT!**

Steve Horwitz, CEO TeamSafe™

Dr. Steve Horwitz

- 1996 United States Olympic Team Medical Staff
- Former Chairman, Maryland Council on Physical Fitness
- Former Maryland State Director, National Strength and Conditioning Association
- Rowlett Youth Soccer Association Board Member
- RYSA U6 – U9 Coach
- Dad



- **Emergency Action Plan**
- **On-The-Field Injury:**
 - **Unresponsive Player Protocol**
 - **Injuries Requiring an Immediate Response**
- **Sudden Cardiac Death**
- **Heat Injuries**
- **Asthma**
- **MRSA**
- **Rhabdomyolysis**
- **Hazardous Weather**

The First 5 to 7 Minutes – Are You Prepared?

“Nearly all of the causes of death in sport are influenced by the care [provided] in the first five to seven minutes.”

—Dr. Doug Casa, PhD
Korey Stringer Institute

The First 5 to 7 Minutes – Are You Prepared?



4 Minutes
Brain Damage Begins

10 Minutes
Brain Death Certain



“The clue to success following major sports injuries is initial survey and adequate prehospital care. Skill training is essential to optimize patient care rapidly as well as to avoid liability.”

— Dr. Nikos Malliaropoulos,
On-field Sports Medicine Emergencies: What's New!

The First 5 to 7 Minutes – Are You Prepared?

Issue 1: Response Time

- National EMSC Data Analysis Resource Center – **9 minutes**
- NATA **7.8 minutes**

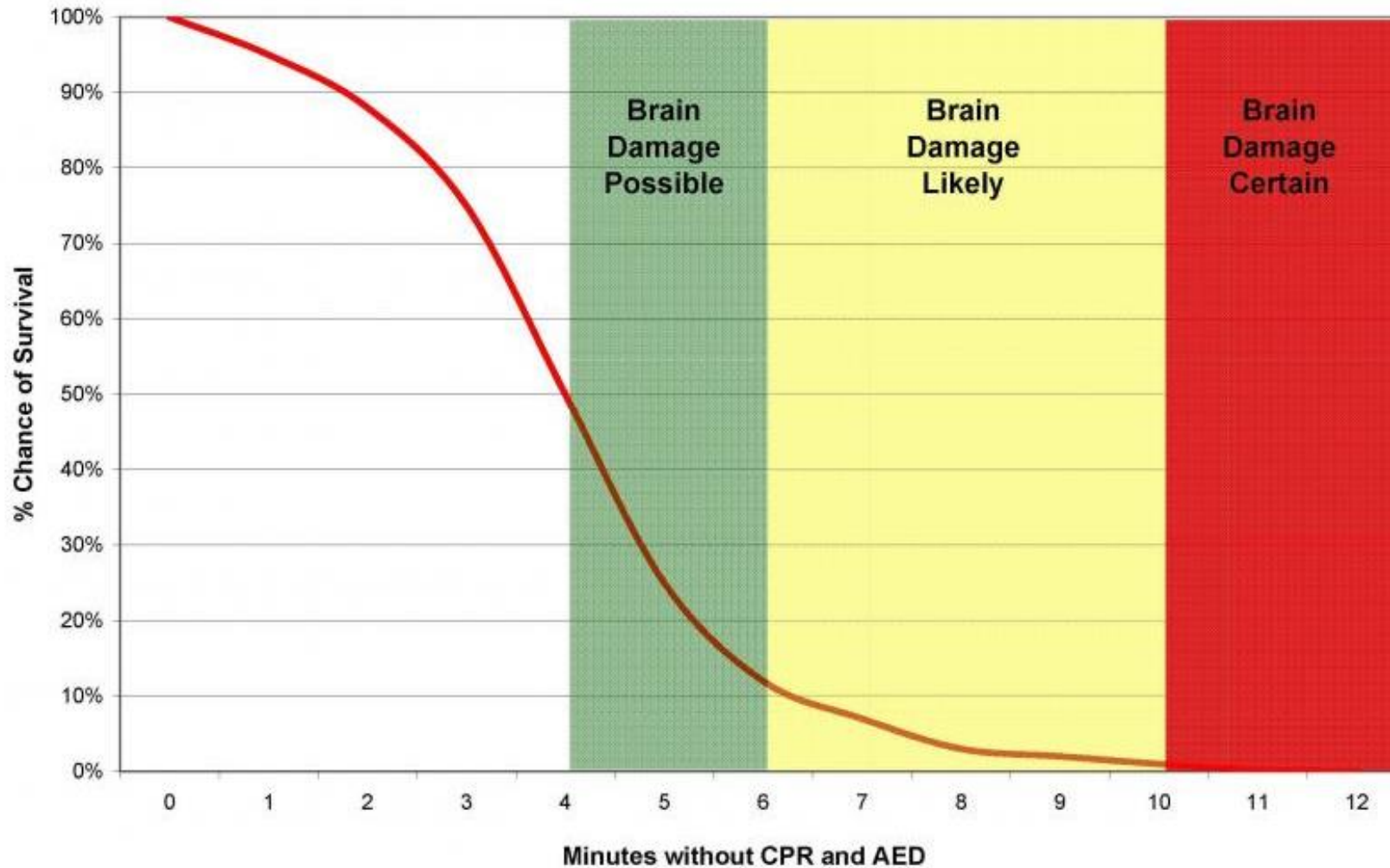
Issue 2: Response Time and Survival Rates

- “The single greatest factor affecting survival from SCA is the time interval from cardiac arrest to defibrillation.”
- CPR performed before the arrival of emergency services doubled the survival rate as compared to no CPR before the arrival of emergency services
- “Response time measured from the time of the 911 call to arrival of the response vehicle on scene, is a significant predictor of patient survival.”

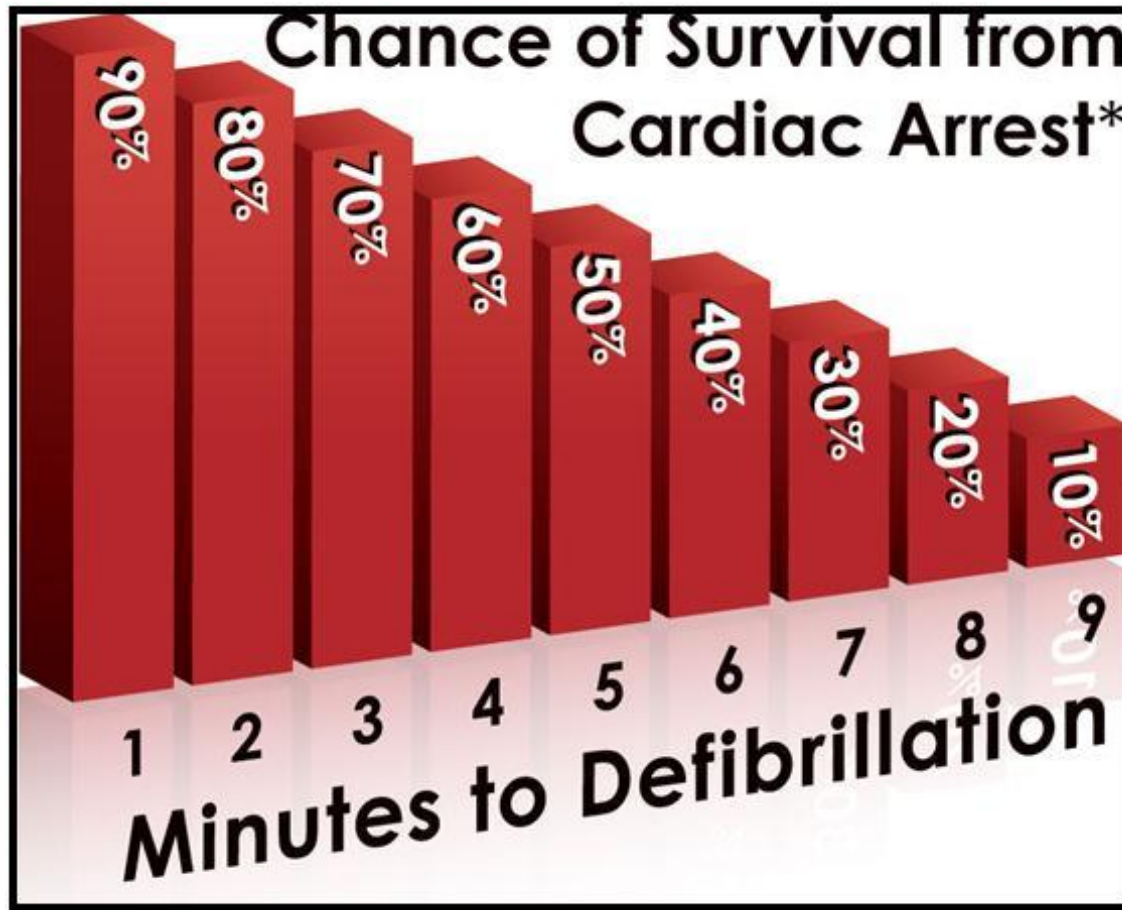


The First 5 to 7 Minutes – Are You Prepared?

Survival Without AED and CPR



On-the-Field Unresponsive Player



The First 5 to 7 Minutes – Are You Prepared?

Issue 3: Relationship of Training to Outcomes

“One of the major determinants of variability in patient outcomes within systems has been shown to be the **quality of CPR performed during resuscitation** with poor performance associated with worse outcomes.”

“The odds of survival were higher for patients treated by **paramedics**” who had more experience performing CPR out of the hospital. And, “Even with training, rescuers **often perform poorly on each of these components, specifically CCF [chest compression fraction], compression depth, and ventilation rates.**”

The *National Athletic Trainers Association* says coaches “do not have the proper medical education to treat injuries or recognize the common causes of life-threatening medical conditions, which puts the lives of athletes in jeopardy.”

Even well-trained health care professionals fail to consistently perform CPR within established American Heart Association (AHA) guidelines during CPA.”

The First 5 to 7 Minutes – Are You Prepared?

Issue 4: Importance of Preparation and Planning (Emergency Action Plan) and Access to Trained Medical Personnel

- 63% of high schools do not have even **ONE** full-time Athletic Trainer
- 30% have **no access** whatsoever to an Athletic Trainer
- “Only 45% of schools reviewed and practiced their emergency response to SCA at least once annually and only 20% of schools posted their emergency action plan at athletic venues.”
- **There are no requirements or statistics for league sports**

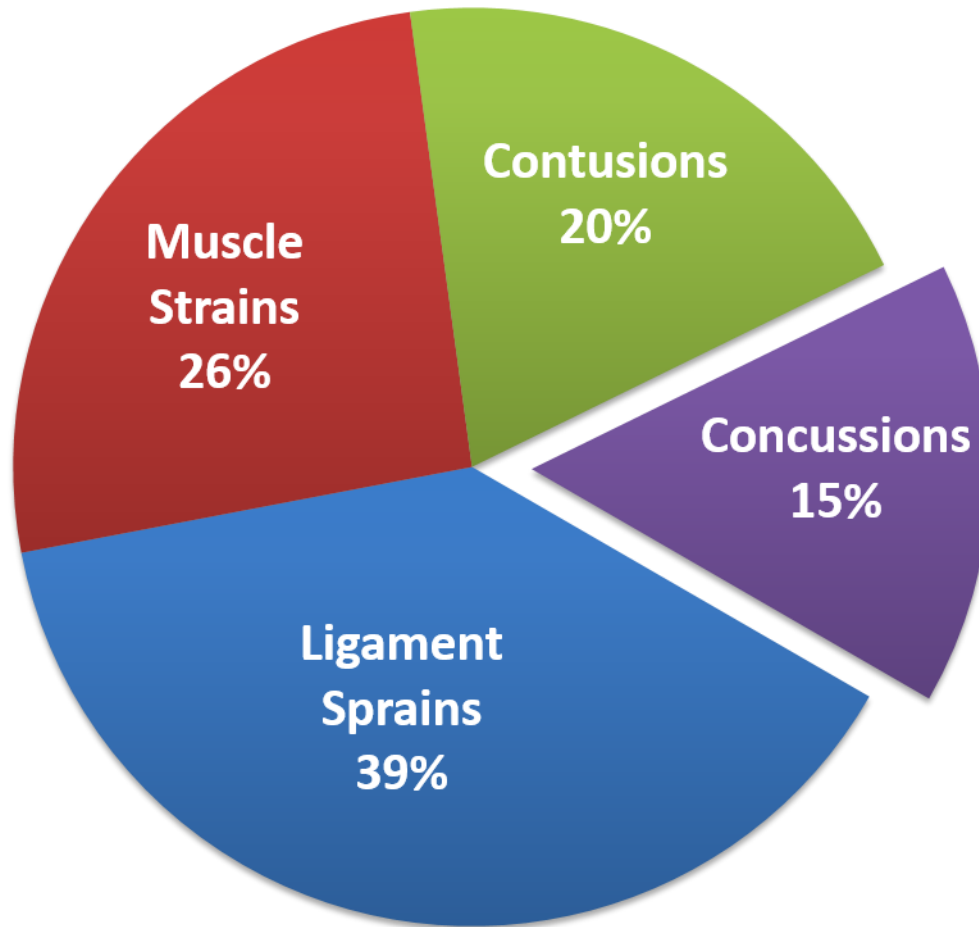
Emergency Action Plan Best Practices List

Every organization, club or team should develop an EAP to address medical emergencies or threats to personnel health and safety.

- Addresses high risk incidents (cardiac, heat, staff and athlete safety)
- Reviewed by local emergency services and shared with on-site medical personnel, safety officials, and organization administrators
- Distributed to ALL staff members (including coaches)
- Specific to the venue and include all healthcare providers who may be providing coverage on site including Certified Athletic Trainers, ATC, or EMS providers
- Available emergency equipment on-site listed with location
- Include contact information for local EMS, club/venue director and venue/location
- Reviewed, updated and rehearsed annually by all staff members

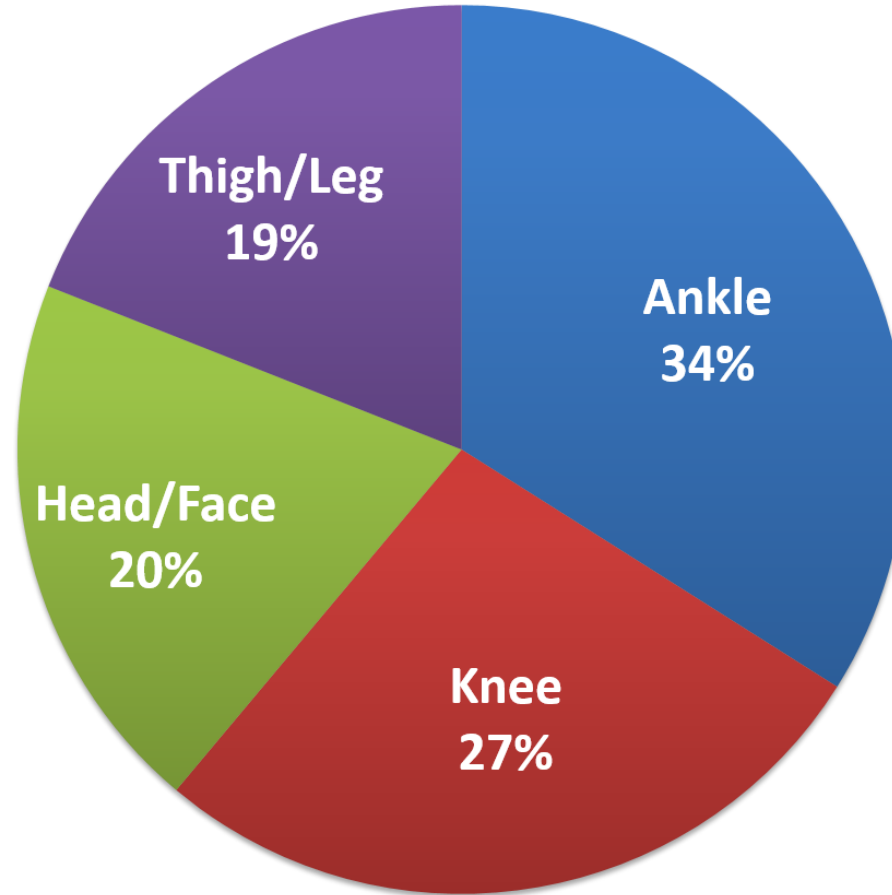
Soccer Injuries

By Injury Type



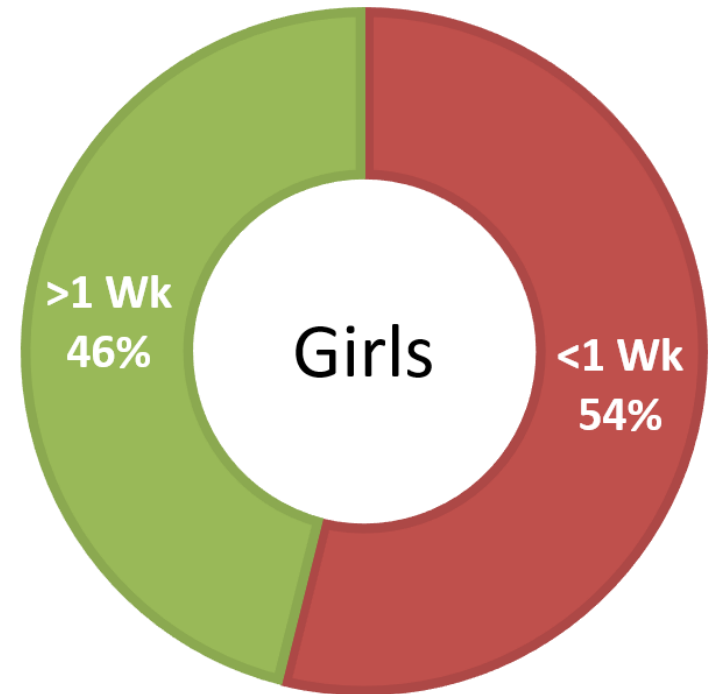
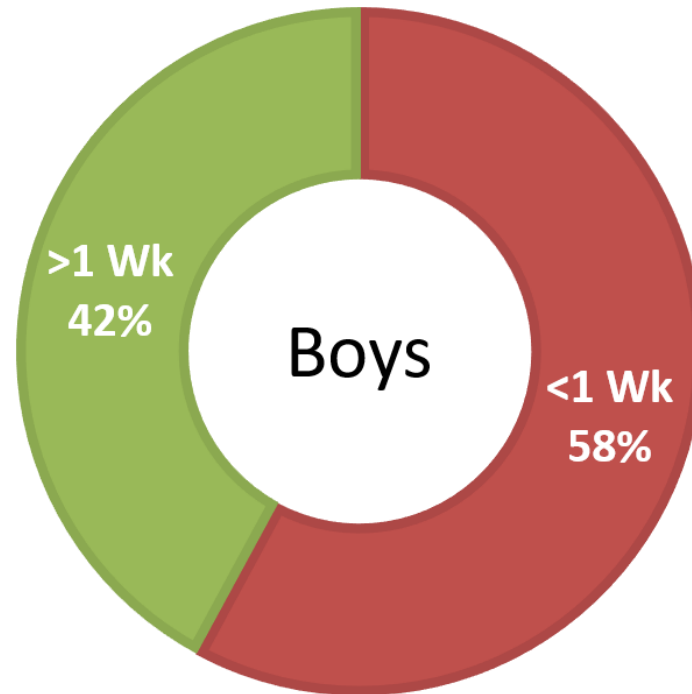
Soccer Injuries

By Location



Soccer Injuries

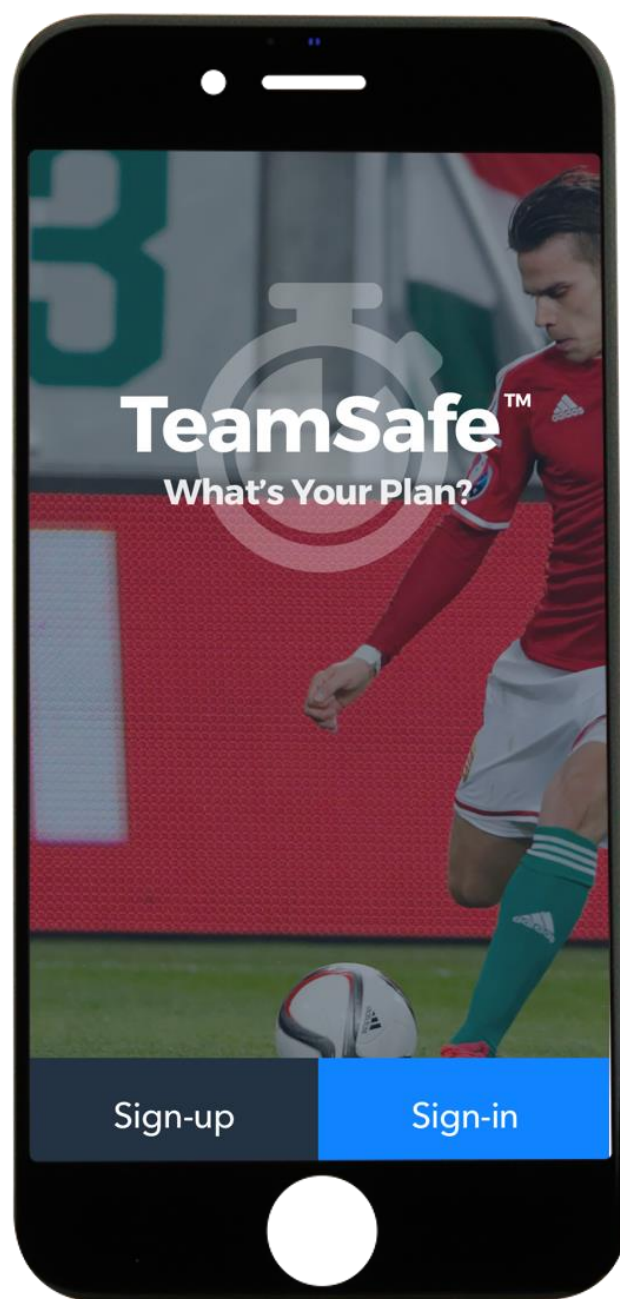
Returned to Play in Under One Week



Diploma In Football Medicine

- The FIFA Diploma in Football Medicine is designed to help clinicians learn how to diagnose and manage common football-related injuries and illnesses. The course is designed specifically for primary care clinicians including doctors, physiotherapist and other allied health practitioners.
- 42 Modules

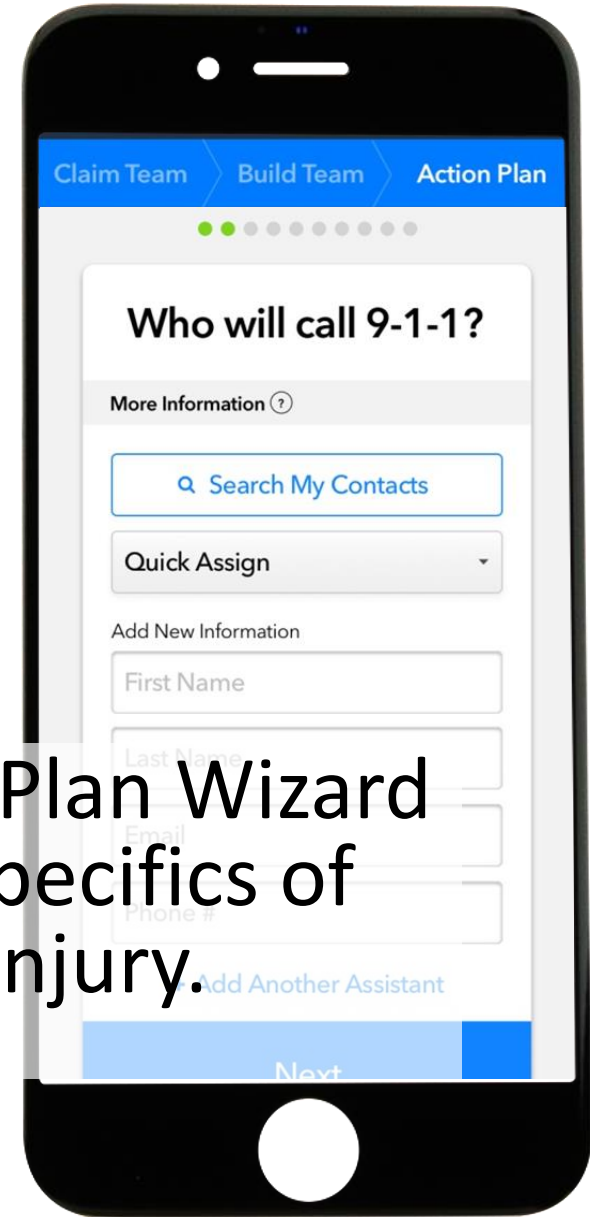
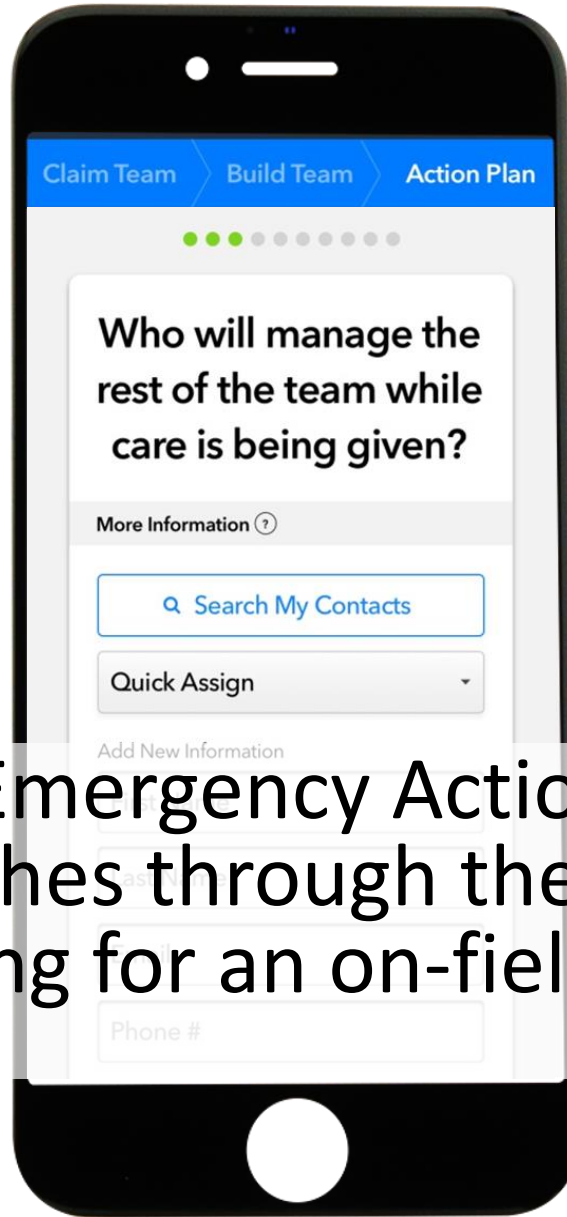
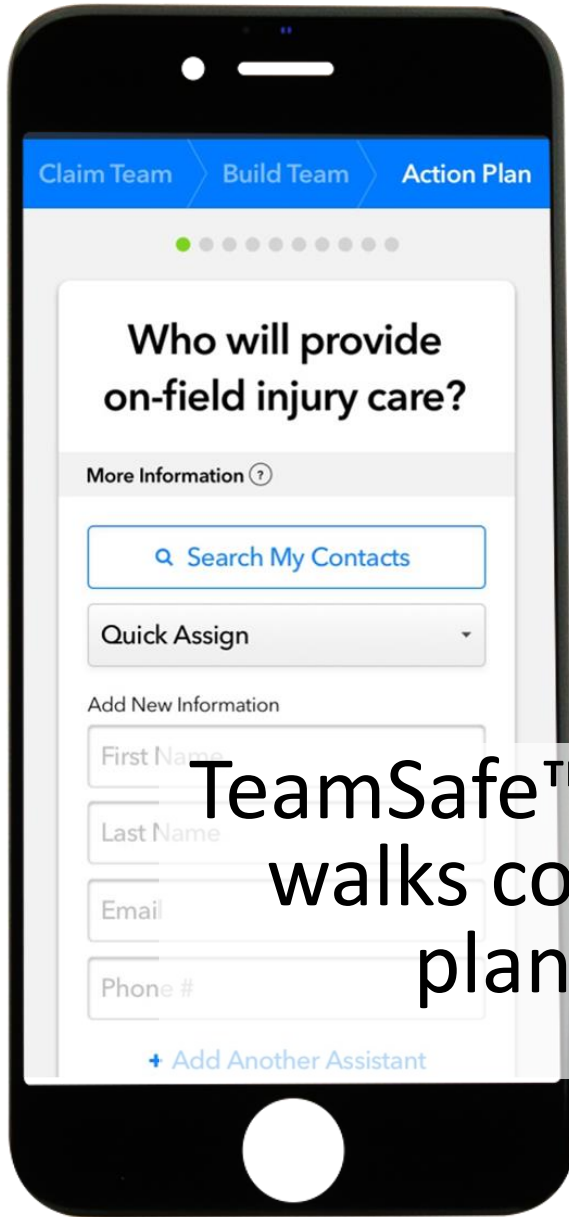




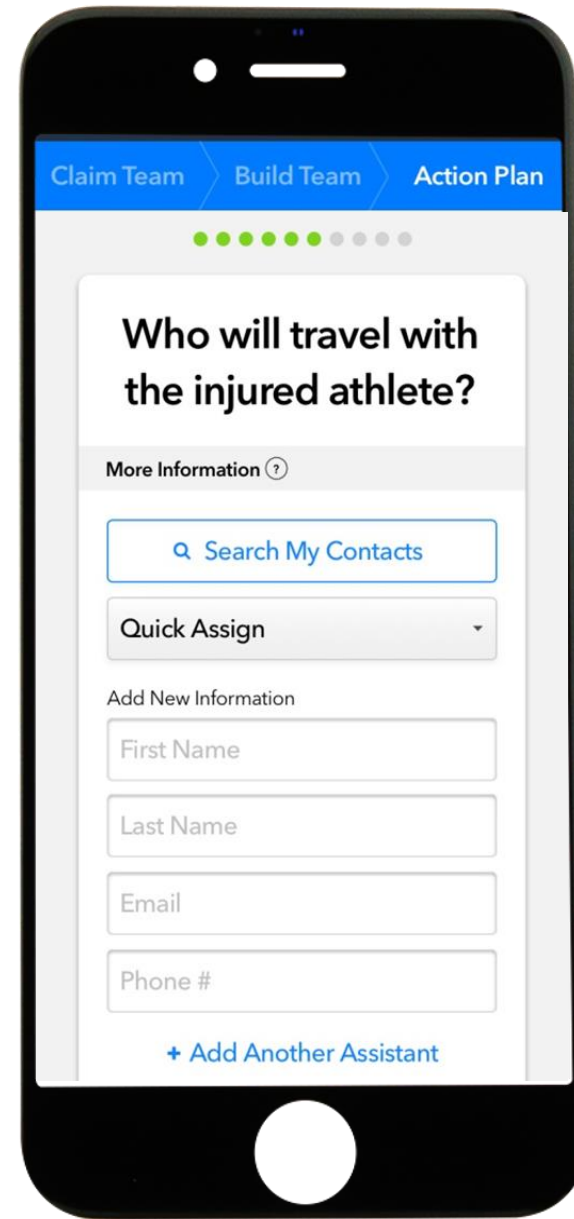
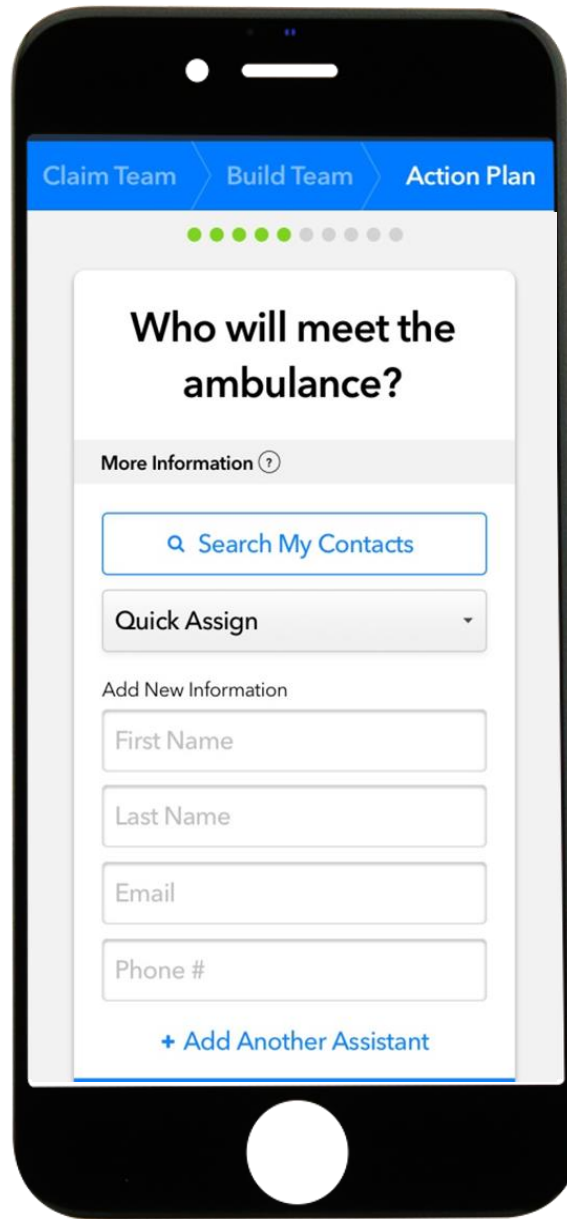
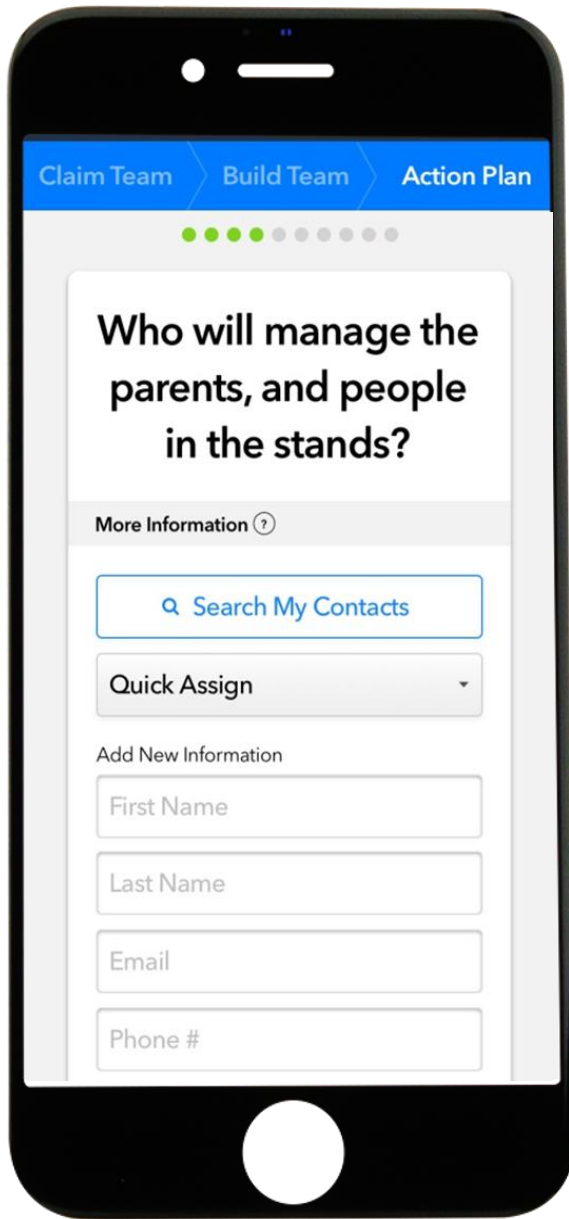
TeamSafe™ is the premier approach to app-based sports safety and injury reporting during on-the-field emergency situations. Using a proprietary protocol, uniquely designed by Olympic and NFL medical advisers, 911 operators, trauma experts, coaches, and parents, TeamSafe™ is committed to the prevention and reduction of injuries in youth sports.

Emergency Action Plan

- Game/Practice Location
- Address
- Meet Ambulance Location
- Evacuation Site in Case of Emergency or Bad Weather
- Coaches names and Phone Numbers
- Designated “in charge” coach or manager



TeamSafe™ Emergency Action Plan Wizard walks coaches through the specifics of planning for an on-field injury.





Claim Team > Build Team > Action Plan

Who will get the AED?

More Information ⓘ

No AED available

Quick Assign ▾

Add New Information

Claim Team > Build Team > Action Plan

Who has/maintains the First Aid Kit (including ice)?

More Information ⓘ

Quick Assign ▾

Add New Information

Claim Team > Build Team > Action Plan

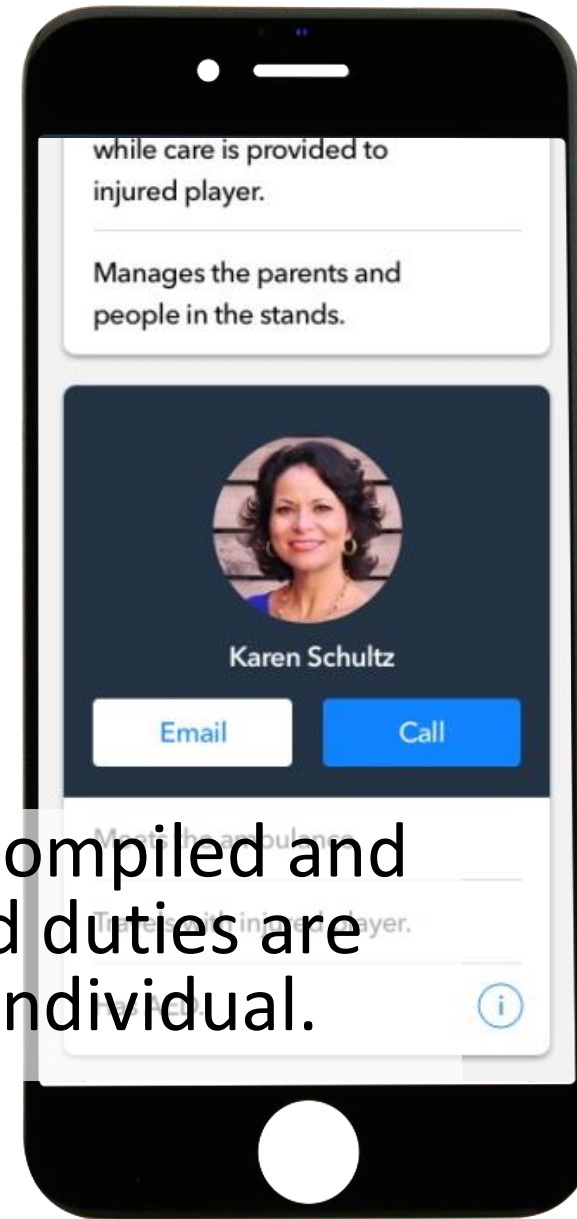
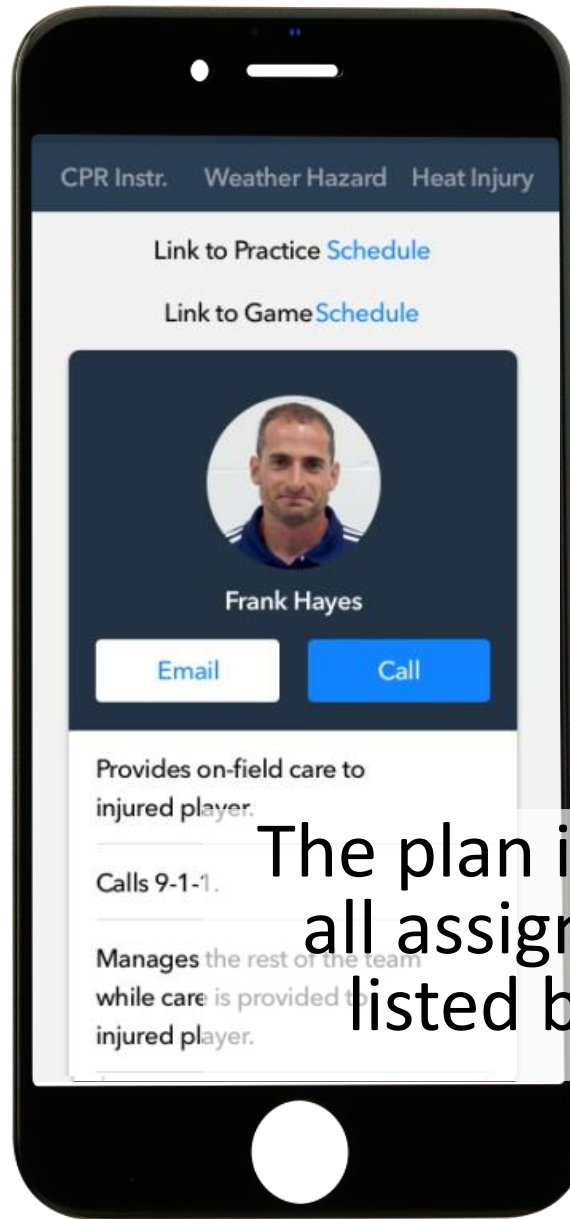
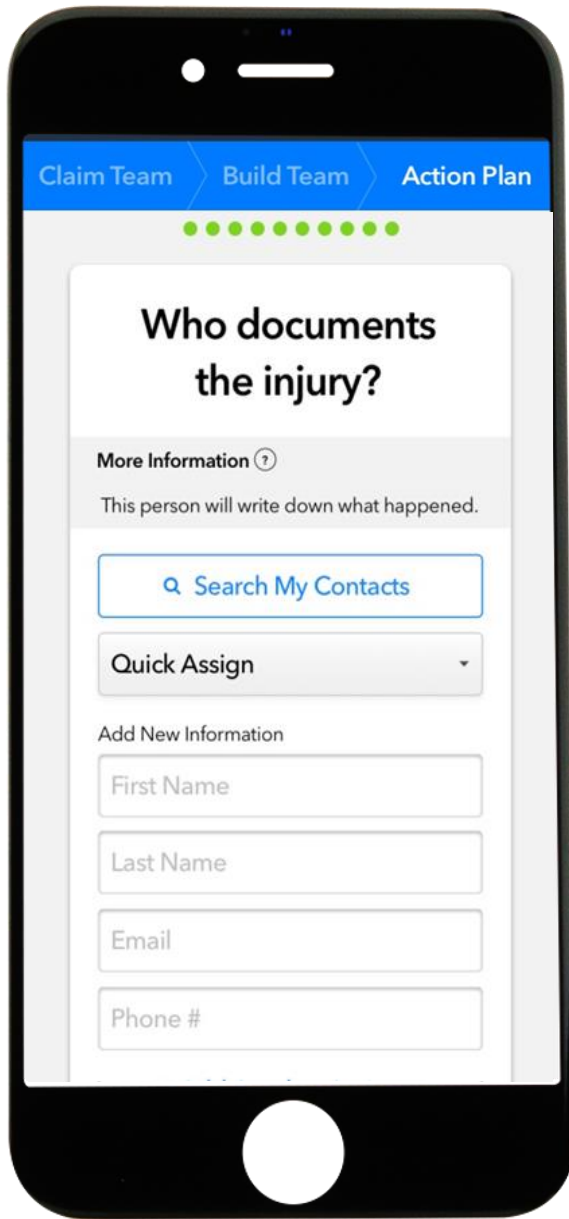
Who notifies Emergency Contacts in case of injury?

More Information ⓘ

Quick Assign ▾

Add New Information

+ Add Another Assistant



The plan is compiled and all assigned duties are listed by individual.

9-1-1 Emergency Call

- Instruct EMS (Emergency Medical Services) to report to location and meet (name of designee) at location for athlete in need of emergency medical treatment.
- Give address with specific location of field.
- Describe injury and any treatment given so far.
- Any other information requested by dispatcher. Do not hang up until dispatcher hangs up!
- Provide appropriate emergency care until arrival of EMS. Upon arrival of EMS provide athlete medical card and treatment rendered.
- Coach/parent should accompany athlete to hospital
- Notify parent(s) if not present.

First Aid Kits

- Epi Pen
- Flashlight
- Q-tips
- Tweezers
- Ace Wraps 2", 4", 6"
- Gauze Pads
- Save a Tooth Kit
- Emergency Contact, Medication/Medical history card for each athlete
- Airway
- Gauze, Rolled
- SCISSORS
- Blanket
- Alcohol (swabs)
- GLOVES
- Sling
- Antibiotic Ointment
- Hydrocortisone Cream
- Splints - multiple sizes
- Band-Aids
- Ice Packs (instant)
- Sun Block
- SteriStrips
- Insect Repellent
- Tape and Pre-Wrap
- Contact Lens Kit
- Iodine Prep Pads
- Tape Cutter
- Disinfectant Soap
- PEN and PAPER
- Thermometer - oral
- Eye Wash/ Patch
- Plastic Bags for Ice

On-the-Field Unresponsive Player

- Survey the Scene
- Are you OK?
- Call 9-1-1
- Not breathing: Face Up or Face Down
 - Face Up: Begin CPR
 - Face Down: Turn with Log Roll



Log Roll Facedown to Face-up



Hands Only CPR

Two steps to save a life:

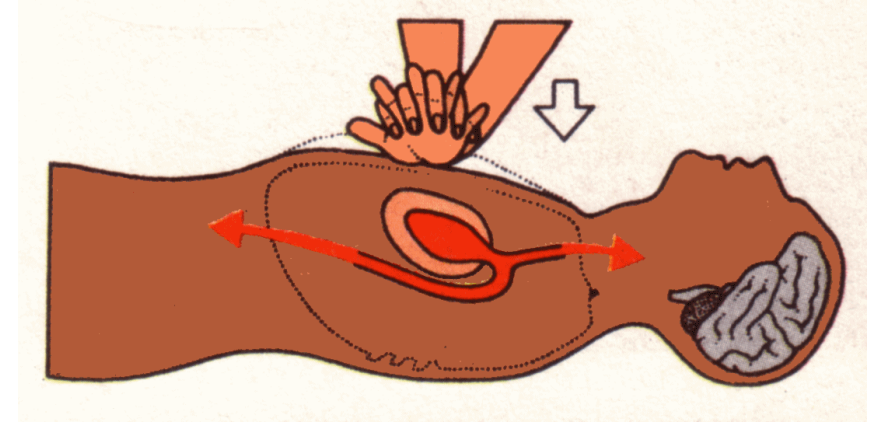
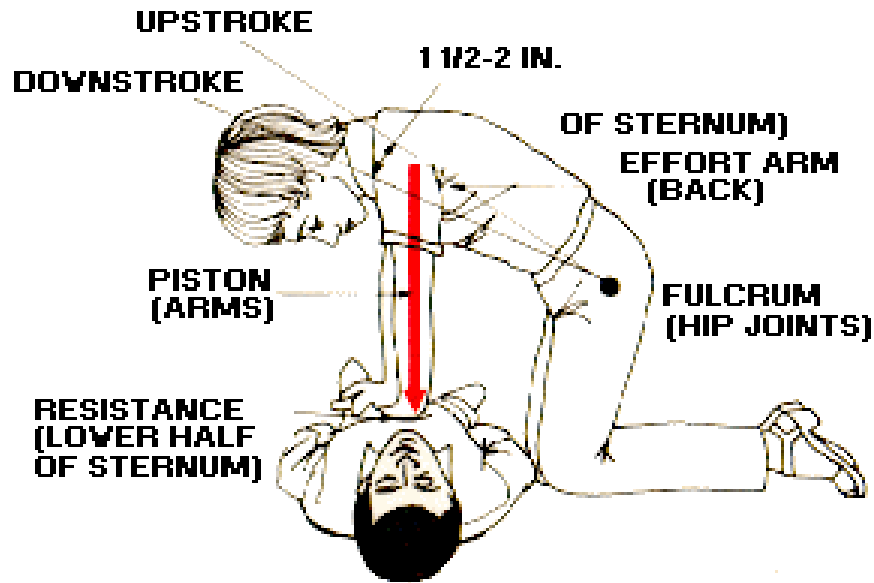


Call Right Away!



**Push Hard & Fast in
the Center of the Chest!**

CPR Compressions



Four biggest errors:

1. Hand placement as chest compressions continue
2. Not allowing to chest to completely rise up between compressions
3. Not pressing hard enough
4. Not compressing fast enough

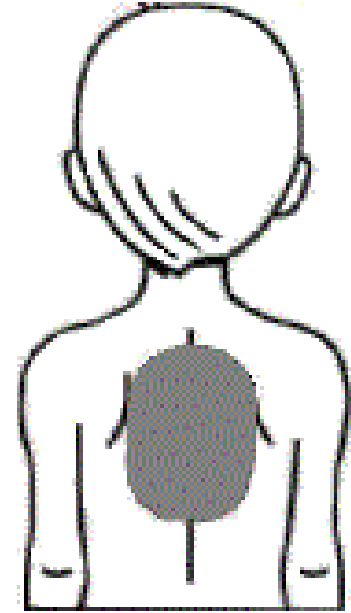
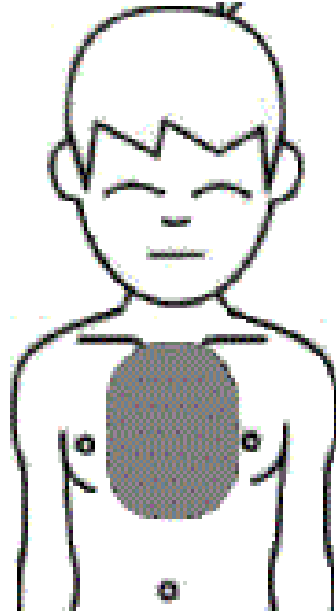
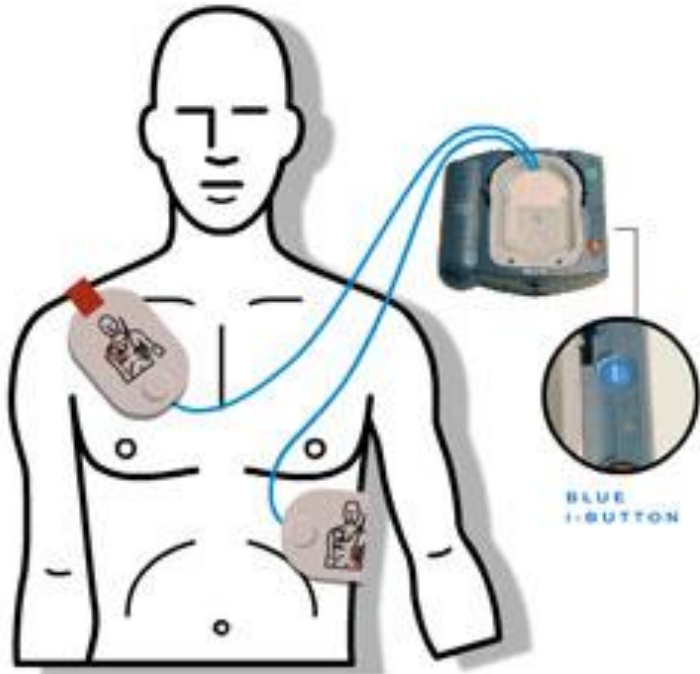
AED without Cover



AED with Cover



AED Pad Placement





C-Spine Injury - Immobilization

- Manual stabilization of the head, neck and shoulders
- Immobilization is either in the neutral position or the position in which the athlete is found.



Log Roll and Cervical Spine Injury

[NATA Position Statement: Acute Management of the Cervical Spine Injured Athlete](#)

A critical factor contributing to the degree of neurologic injury is the extent to which the injury involves the spinal cord.

Bleeding

- Put on gloves.
- Apply direct pressure with gauze pad to area.
- Once bleeding has been contained, decide if it is safe to move athlete.
- If in doubt, maintain direct pressure, [call 9-1-1](#), do not move athlete and wait until Emergency Services arrives.

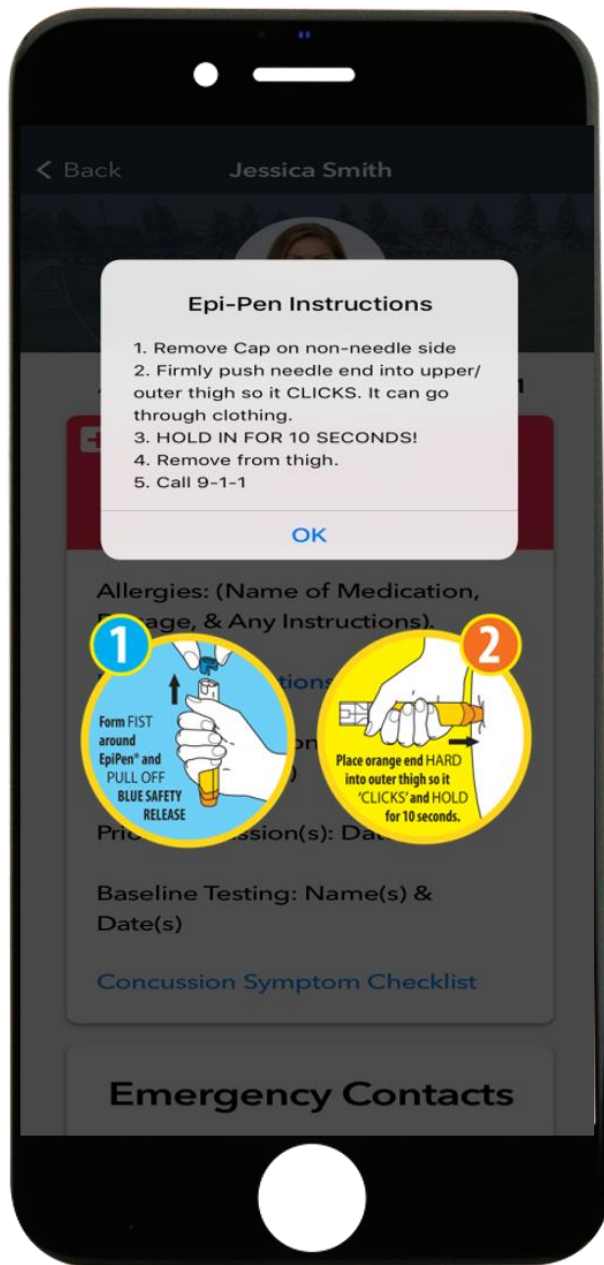


Obvious Deformity

Fracture or Dislocation

- Do not move the athlete or move the injured area even if they are face down.
- Brace area and hold it in position you found it in.
- Call 9-1-1
- Maintain position until Emergency Services arrives.





16% Used Their Epinephrine Auto-injectors Correctly

TeamSafe™ is here to help you get it right the first time.

Types of Blunt Trauma

- **Kidney injury.** This may cause flank pain and blood to appear in the urine.
- **Spleen injury.** This causes pain in the **upper left side** of the abdomen. The spleen filters almost 10% of the body's blood supply every minute. Tearing of the spleen can cause rapid and life-threatening internal bleeding.
- **Liver injury.** This causes pain in upper right side of the abdomen. The liver has two lobes. **The lobe most often injured is the right lobe because it is bigger and presses against the ribcage.** A torn liver can cause severe bleeding, but it doesn't bleed as frequently as a torn spleen.
- **Abdominal injury.** This can result in injury to the pancreas, diaphragm, stomach, gallbladder, bladder, or intestines. Any organ in the abdomen can be injured. A single organ or multiple organs can be injured

Blunt Trauma Recognition

- Abdominal pain
- Tenderness over the injured area
- Rigid abdomen
- Left arm and shoulder pain (spleen)
- Right-sided abdominal pain and right shoulder pain (liver)
- Blood in the urine (kidney)
- Cold, sweaty skin (early signs of shock)
- Bluish discoloration of the belly
- Nausea and vomiting
- Rapid pulse
- Low blood pressure
- Loss of consciousness

Blunt Trauma Emergency Care

After failure to control the airway, blunt abdominal trauma (BAT) is the second most frequent cause of preventable death in pediatric trauma patients

- Palpate the athlete's abdomen and apply gentle pressure. If painful, call 9-1-1
- If the athlete's abdomen is distended (swollen, bulging, bloated) – call 9-1-1
- If the athlete's abdomen is bruised (discolored - red, black and blue) – call 9-1-1

Sudden Cardiac Awareness Information

What is Sudden Cardiac Arrest?

- Occurs suddenly and often without warning.
- An electrical malfunction (short-circuit) causes the bottom chambers of the heart (ventricles) to beat dangerously fast (ventricular tachycardia or fibrillation) and disrupts the pumping ability of the heart.
- The heart cannot pump blood to the brain, lungs and other organs of the body.
- The person loses consciousness (passes out) and has no pulse.
- Death occurs within minutes if not treated immediately.

Incidence Of Cardiovascular Sudden Deaths In Minnesota High School Athletes

- Over the 26-year period, 1986-2011, **13 SDs occurred in high school student-athletes related to physical exertion, during competition** (n = 7) or at practice (n = 6).
- Ages were 12-18 years (median 16 years); each was a white man. Most common sports involved were basketball, wrestling, or cross-country running.
- Forensic examination found cardiac causes in 7: hypertrophic cardiomyopathy (in 2), anomalous coronary artery (2), myocarditis (1), aortic stenosis (1), and arrhythmogenic right ventricular cardiomyopathy (1); 4 had structurally normal hearts (with negative toxicity).
- Based on autopsy data, only about 30% of the SDs were due to diseases that could be reliably detected by preparticipation screening, even with 12-lead electrocardiograms

Sudden Cardiac Awareness Information

What is the treatment for Sudden Cardiac Arrest?

- Time is critical and an immediate response is vital.
- **CALL 911**
- **Begin CPR**
- **Use an Automated External Defibrillator (AED)**

What are ways to screen for Sudden Cardiac Arrest?

- The American Heart Association recommends a pre-participation history and physical including 12 important cardiac elements.
- **The UIL Pre-Participation Physical Evaluation – Medical History form includes ALL 12 of these important cardiac elements and is mandatory annually.**
- Additional screening using an electrocardiogram and/or an echocardiogram is readily available to all athletes, but is not mandatory.

Sudden Cardiac Awareness Information

What are the symptoms/warning signs of Sudden Cardiac Arrest?

- Fainting/blackouts (especially during exercise)
- Dizziness
- Unusual fatigue/weakness
- Chest pain
- Shortness of breath
- Nausea/vomiting
- Palpitations (heart is beating unusually fast or skipping beats)
- Family history of sudden cardiac arrest at age < 50

****ANY of these symptoms/warning signs that occur while exercising may necessitate further evaluation from your physician before returning to practice or a game.**

NO EXCUSES!

National Center for Catastrophic Sports Injury Research

There is “no excuse for any number of heatstroke deaths since they are all preventable with the proper precautions.”

HEAT INJURIES

PROBLEM: Overwhelmed thermoregulatory system

Exertional Heat Illness, Lawrence Armstrong 2003, Human Kinetics (2006 NSCA Conference)

The primary reasons for any athlete to overheat on the field are:

- Intensity and duration of practice
- Poor conditioning and acclimatization to heat
- The environment
- The uniform (clothing)- too much

HEAT CRAMPS

Signs and Symptoms

- Painful cramps involving abdominal muscles and extremities
- Caused by intense, prolonged exercise in the heat and depletion of salt and water due to profuse sweating.

Treatment

- Water
- Sports Drink
- Light stretching
- Massage of cramped muscles

Return To Play

- Cramp gone
- Pulse normal
- Skills performance

HEAT EXHAUSTION

Fluid Depletion

- CV system unable to meet demands of blood flow to skeletal muscle (exercise) and skin (heat dissipation)

Symptoms

- Hard to keep playing
- Profuse sweating
- Loss of coordination
- Dizziness
- Fainting
- GI/muscle cramps
- Headache
- Nausea/vomiting
- Diarrhea
- Weakness

Treatment

- Stop activity
- Move to cool environment
- Elevate legs above heart
- Cool with cold water, fans, or cold towels
- Rehydrate slowly with chilled water or sports drink as long as not vomiting or nauseated
- Should improve rapidly. If not, EMS.

Return To Play

- Symptoms gone
- Pulse normal
- Skills performance

HEAT STROKE

1 in 350,000 HS and College Football Athletes

Symptoms

- **Decline of Mental Acuity**
Confusion, forgets details, cannot follow progress of game
- **Bizarre Behavior**
Combative, loses temper, picks a fight with anyone, blank stare
- **Physical Decline**
 - Wobble, stagger
 - Loss of coordination
 - Nausea/vomiting/diarrhea
 - Unconsciousness
 - Seizure
 - High body temperature (rectal >104 F / 40 C)
 - Rapid/shallow breathing
 - Rapid/weak pulse
 - Decreased blood pressure

Treatment: EMERGENCY

- Do not underestimate heat illness, get medical help ASAP!
- Remove from the heat and elevate their feet. Put something between them and the ground.
- **ICE BATH!**
- Stop cooling when body temperature drops below 102°, You could cause hypothermia. Have a thermometer in your kit!
- Give cold beverages to sip slowly. About a half cup every 15 minutes. If they drink too fast they may vomit. Water will suffice, but salt water or a sports drink may be better.

Return To Play

- Medical staff makes the determination

DEHYDRATION

Percent of Weight Loss	Pounds Lost (based on 150 lbs person)	Effect
1%	1.5	Thirsty, Increased body temperature
3%	4.5	Loss of Energy, Impaired performance
5%	7.5	GI problems, nausea, vomiting, cramps
7%	10.5	Loss of coordination, Hallucinations
10%	15.0	Circulatory collapse, death?



Identify Athletes At Greater Risk

- Prior history of heat difficulties
- Poor conditioning
- Overweight
- Sun burned
- Acute (fever, virus)
- Chronic illness (heart, lung, autoimmune)
- Use of diuretics or certain medications (ie, antihistamines, diuretics, antihypertensives, attention-deficit hyperactive disorder drugs)
- Use of ephedra or other stimulant product – chronically dehydrated
- Extraordinary effort of athlete to “make the team”

Increased Risk if...

- High ambient temperature, solar radiation, and high humidity
- Athletic gear or uniforms
- Peer or organizational pressure
- Inappropriate work-to-rest ratios based on athlete's level of fitness
- Minimal access to fluids before and during practice and rest breaks
- Lack of education and awareness of heat illnesses among coaches, athletes, and medical staff
- No emergency plan to identify and treat exertional heat illnesses
- Delay in recognition of early warning signs

Hydration Guidelines

Pre-practice/game

- Every Day: plenty of fluid
- Check weight before and after

During practice/game

- Water Breaks: 6-12 oz per 15-20 minutes depending on intensity of play and weather conditions

Post-practice/game

- Check weight
- **Replace each pound lost with 16 - 24 oz**
 - **Cannot gulp this down**
- Sip fluid the remainder of the day
- Check weight next morning

Hyponatremia

Low Sodium In the Blood

Extra fluid expands blood volume and dilutes blood salt levels while brain salt levels remain normal. Fluid moves from low salt area (bloodstream) to high salt area (brain) – brain swelling. The brain expands and has nowhere to go (skull), so it is squashed to cause headache, nausea, and blurred vision.

Occurrence – 1:1000 people, women 6:1
– 4+ hours of activity at slow pace - inexperience

HEAT INJURY PREVENTION PLAN

- Acclimate to heat over 8 – 14 days
 - Gradually increase intensity and length of practice
- **Pay attention to heat index** – clothing amount and color
- Provide shaded area: Tarp or EZ Up Tent
- **Provide a “kiddy” pool – ICE BATH!**
 - Cooling of feet and hands especially
- Have plenty of ICE and spray bottles
- **Weigh athletes before and after practice**
 - Replace every pound lost with 16oz fluid
 - May want to replace sodium – canned soup, tomato juice
- Water and rest breaks every 15 – 30 minutes
- Pay attention to your athletes behavior – buddy system
- Athletes must observe urine color – stay hydrated!

Heat Index

http://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html

Temperature (F) versus Relative Humidity (%)

°F	90%	80%	70%	60%	50%	40%
80	85	84	82	81	80	79
85	101	96	92	90	86	84
90	121	113	105	99	94	90
95		133	122	113	105	98
100			142	129	118	109
105				148	133	121
110						135

HI	Possible Heat Disorder:
80°F - 90°F	Fatigue possible with prolonged exposure and physical activity.
90°F - 105°F	Sunstroke, heat cramps and heat exhaustion possible.
105°F - 130°F	Sunstroke, heat cramps, and heat exhaustion likely, and heat stroke possible.
130°F or greater	Heat stroke highly likely with continued exposure.

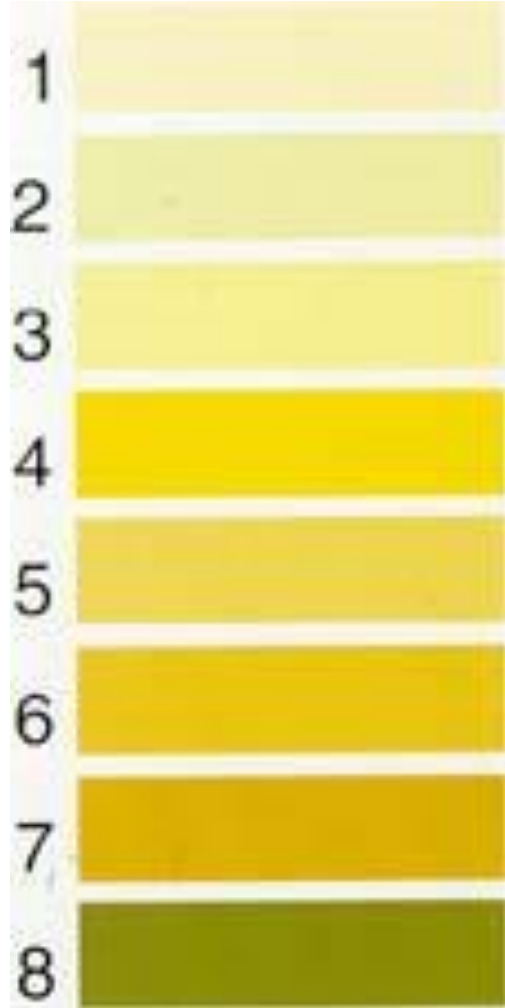


Air Quality

- Green (good)
- Yellow (moderate)
- Orange (Unhealthy for sensitive groups)
- Red (Unhealthy) – shortened practices
- Purple (Very Unhealthy) – shortened or cancelled practices
- Website:
<http://www.mwcog.org/environment/air/forecast/>



Urine Color



Acceptable

- 1 – Very pale yellow
- 2 – Pale yellow
- 3 – Straw colored

Asthma

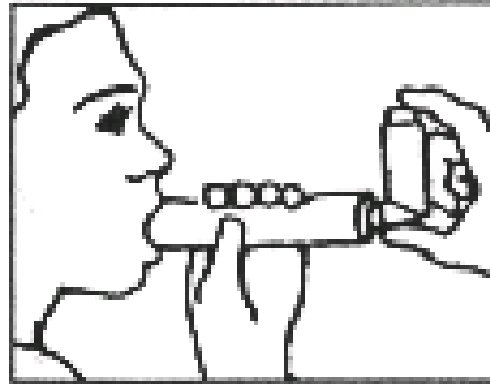
Call 9-1-1 if:

- Athlete in respiratory distress:
 - Struggling to breathe
 - Significant Coughing, Wheezing, Gasping
 - Nostrils wide open
 - Chest tightness (Ribs are flaring)
- Medicine is not helping (no improvement within 15 minutes of initial dose)
- Lips or fingernails are grey or bluish
- Confusion
- Trouble walking or talking
- <http://www.nata.org/sites/default/files/MgmtOfAsthmaInAthletes.pdf>

Asthma



A. Open mouth with inhaler 1 to 2 inches away



B. Use spacer/holding chamber (that is recommended especially for young children and for people using corticosteroids).



C. In the mouth. Do not use for corticosteroids.



MRSA: Methicillin-resistant Staphylococcus aureus



MRSA WARNING!

- **Crowding**
- **Frequent skin-to-skin contact**
- **Compromised skin (i.e. cuts or abrasions)**
- **Contaminated items and surfaces**
- **Lack of Cleanliness**



Rhabdomyolysis



- A breakdown of muscle fibers caused by extreme overload to the muscles.
- Damage to muscle causes the release of muscle fiber (myoglobin – protein pigment) into the bloodstream.
- Myoglobin breakdown may cause severe kidney blockage and damage.
- Muscle soreness, pain, tenderness, weakness
- Swelling
- Dark, cola or red colored urine
- Joint pain
- Fatigue, dizziness, nausea, vomiting
- Seizures

Hazardous Weather



- Establish a chain of command that identifies who is to make the call to remove individuals from the field.
- 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).
- Have a means of monitoring local weather forecasts and warnings.
- Designate a safe shelter for each venue. See examples below.
- When thunder is heard within 30 seconds of a visible lightning strike, or a cloud-to-ground lightning bolt is seen, the thunderstorm is close enough to strike your location with lightning. Suspend play for thirty minutes and take shelter immediately..

Lightning



- Lightning is one of the top ten causes of sudden death in sport.
- 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.
- Avoid being the highest point in an open field, in contact with, or proximity to the highest point, as well as being on the open water. Do not take shelter under or near trees, flagpoles, or light poles.
- Assume that lightning safe position (crouched on the ground weight on the balls of the feet, feet together, head lowered, and ears covered) for individuals who feel their hair stand on end, skin tingle, or hear "crackling" noises. Do not lie flat on the ground.

Lightning: Safe Shelter



- A safe location is any substantial, frequently inhabited building. The building should have four solid walls (not a dug out), electrical and telephone wiring, as well as plumbing, all of which aid in grounding a structure.
- The secondary choice for a safer location from the lightning hazard is a fully enclosed vehicle with a metal roof and the windows completely closed. It is important to not touch any part of the metal framework of the vehicle while inside it during ongoing thunderstorms.
- It is not safe to shower, bathe, or talk on landline phones while inside of a safe shelter during thunderstorms (cell phones are ok).

"...many parents don't realize how under-resourced the medical care is for their child's team until they're facing an injured child and a dearth of options."

—Dr. James Andrews
Orthopedic Surgeon



TEAMSAFE™

WHAT'S YOUR PLAN?