The Physical Educator Vol. 75 • pp. 633–646 • 2018
https://doi.org/10.18666/TPE-2018-V75-I4-8208

FACILITY RISK MANAGEMENT

Physical Education and Athletic Facility Emergency Readiness: The Emergency Action Plan

Jennifer K. Popp, David Berry, Lawrence W. Judge

Abstract

The emergency action plan (EAP) at physical education and sport venues is a necessity, no matter the level. Although medical emergencies are rare, an EAP helps to ensure a smooth response, necessary for positive outcomes. Many entities should be involved developing the EAP. All personnel who act in an emergency must be trained in first aid and cardiopulmonary resuscitation, and automated external defibrillators should be readily available. This article assists administrators with developing and implementing emergency planning at all facilities that host athletic events at any level. This article breaks down an EAP into its two central components: equipment and personnel.

Physical education teachers, coaches, officials, and athletic administrators are no exception to risk assessment and management. Medical emergencies are not common occurrences, yet emergency planning is important for all personnel associated with facilities that host physical education classes and athletic events. From a recreational level to a professional sports team level, associated personnel must be prepared for potential emergencies. A 2008 study by the National Council of Youth Sports reported that over 60 million

Jennifer K. Popp is a clinical assistant professor, Department of Health and Kinesiology, Purdue University. David Berry is a professor, Department of Kinesiology, Saginaw Valley State University. Lawrence W. Judge is a professor, School of Kinesiology, Ball State University. Please send author correspondence to lwjudge@bsu.edu.

children ranging in age from 6 and under to 18 years old participate in youth sports. From 2013 to 2014, the National Federation of State High School Associations (2014) indicated almost 7.8 million participants in high school sports around the United States, while the National Collegiate Athletic Association (Irick, 2014) reported over 470,000 participants during the same time. Data gathered from 1980 to 2006 show that 1,866 young, competitive athletes ranging from 8 to 39 years of age died suddenly in the United States (Maron, Doerer, Haas, Tierney, & Mueller, 2009). While 80% of deaths were attributed to cardiovascular events occurring during or just after physical exertion, 22% of deaths were a result of blunt trauma, particularly to the head and neck. More notably, of those cardiovascular-related deaths, most who died were participating in sanctioned high school, middle school, or youth sports. Many of these deaths are avoidable given proper prevention, recognition, and treatment protocols (Casa et al., 2013). Collegiate and secondary school athletic programs, as well as recreational sports facilities, would benefit greatly from having an athletic trainer (AT) to lead these efforts. Unfortunately, schools and recreational athletic settings rely on athletic directors, coaches, or club administrators to ensure the safety of sports participants, as these organizations lack appropriate medical personnel in many instances (Casa et al., 2012).

For the athlete to have the best possible outcome, competent and immediate care is critical, as a delay of care until emergency medical responders arrive may result in disability or death (Casa et al., 2012). At a minimum, all coaches should be trained in first aid, cardiopulmonary resuscitation (CPR), and the use of the automated external defibrillator (AED; Casa et al., 2012; Drezner et al., 2007; Pryor et al., 2014). An AED should be available within 3 to 5 min of collapse, with the gold standard being 1 min (Pryor et al., 2014). This may mean that numerous AEDs are required, particularly in places with multiple athletic venues in various locations, especially for off-campus facilities. A recent study concluded that high schools with more than one AED were more likely to ensure early defibrillation, but that 84.6% of schools with AEDs indicated early defibrillation (defined as less than 3 to 5 min from time of collapse) was possible at every athletic venue (Toresdahl, Harmon, & Drezner, 2013).

While having personnel with CPR and AED training would be advantageous when an athlete sustains a cardiovascular event, several other causes of significant injury or sudden death (e.g., blunt trauma, heat stroke, pulmonary conditions) require personnel to be trained in first aid to save the life of the athlete. For this reason, schools and recreational sports facilities (that sponsor athletic events) should hire an AT, who is a licensed medical professional trained in preventing, recognizing, and treating emergency conditions in physically active individuals (Casa et al., 2012; Pryor et al., 2014). However, recent data indicate that less than 40% of public high schools in the United States employ full-time ATs (Pryor et al., 2015), and one would suspect that even fewer athletic club organizations employ ATs. Because of the relatively low incidence of emergencies in sports (Maron et al., 2009), athletic administrators and personnel develop a false sense of security and become complacent in terms of emergency preparedness. Emergency preparedness should involve many individuals including qualified medical personnel, organization administrators, coaches, and others (Almquist et al., 2008; Casa et al., 2013). However, the lack of access to qualified medical personnel in many athletic settings hinders the development of a comprehensive emergency action plan (EAP). The health and safety of secondary school, recreation, and club athletes are of utmost concern for stakeholders, including health care professionals, administrators, coaches, parents, and athletes (Casa et al., 2013). Therefore, this article assists organizations and administrators with implementing emergency planning at all facilities that host athletic events at any level.

Emergency Action Plans

All organizations that host athletic events should have an EAP (Almquist et al., 2008; Casa et al., 2013; Casa et al., 2012; Drezner et al., 2007; Pryor et al., 2014; Toresdahl et al., 2013). Both the National Collegiate Athletic Association (2014) and the National Association of Intercollegiate Athletics (2016), as well as the National Federation of State High School Associations (2016), recommend that a written EAP be developed for each athletic venue. This type of EAP is specific to medical conditions that occur on an athletic field, versus the type of EAP a school might have developed to prepare for emergencies

such as fire, tornado, or an active shooter. The athletic EAP should be considered the road map for handling medical emergencies (Andersen, Courson, Kleiner, & McLeod, 2002). It should be comprehensive, yet flexible enough to be adapted to any emergency situation. At a minimum, the types of catastrophic injuries and illness for which the EAP should be designed include, but are not limited to, catastrophic brain injuries, heat illnesses, spinal cord injury, cardiac distress and arrest, respiratory distress, exertional sickling, asthma, concussion, and diabetes (National Collegiate Athletic Association, 2014). Figure 1 provides a template for an EAP with a sample of the type of information to be included. The institution or organization can modify this to fit its needs.

Development of the EAP

Ideally, administrators of that organization (e.g., athletic directors and league officials) develop the EAP, in collaboration with other associated personnel, including ATs, coaches, school nurse, team physician, and campus public safety officials (Casa et al., 2013; Casa et al., 2012; Drezner et al., 2007). In addition to on-site personnel, local emergency medical services (EMS) personnel should be involved in developing the EAP (Andersen et al., 2002; Casa et al., 2012). Personnel from local emergency facilities to which an athlete would be transported should also be included in developing the EAP for the organization or institution (Andersen et al., 2002). This will help familiarize all individuals involved in the response to an emergency of the steps to take, as well as the anticipated response to an emergency.

One important feature of the EAP is that it must be specific to the athletic venue (Andersen et al., 2002; Casa et al., 2013). In other words, a high school should write an EAP for each athletic venue (e.g., baseball field, football stadium, basketball court, field house, swimming pool) in which sanctioned athletic events occur. Because each athletic venue has a specific location and/or unique access points and characteristics, simply referring to the general facility (e.g., providing the school's address) is inadequate if the athletic venue is located in an area not directly associated with the address of the main school or recreational sports facility. The athletic venue–specific EAP should include a list of emergency phone numbers, a facility map with street address, and pertinent directions to

Name of Sport and Venue: Men's Basketball/Smith Arena

Address: 1000 W. Arena Drive, Smithville, IN

Venue Directions: From Tiger Drive, enter parking lot adjacent to tennis courts (on the north side of the arena). Enter through Gate 1.

GPS Coordinates (for medical helicopter transport)**:** 00 00.00 / 00 00.00

[Insert Map of Venue Here, e.g., Google Maps or Campus Map]

Emergency Personnel: Coach assumes the role of first responder (in the absence of an AT or team physician).

Emergency Communication: Cell phones provided by the coaching staff will be used.

Emergency Equipment: First aid kit (location: equipment room), AED (location: concession stand), Splints (location: equipment room).

Role of First Responders:

1. Assessment and immediate care of the injured/ill athlete(s)
2. Activation of EMS
   Call 911 (or other emergency number, if relevant)
   Provide the following information:
   - Caller Name
   - Venue Address
   - Phone Number
   - Number/Condition of the Injured Individual(s)
   - First Aid Treatment Initiated
   - Specific Directions to the Venue
   - Other Information as Requested (do NOT hang up before the dispatcher does)
3. Retrieval of emergency equipment
4. Direct EMS to scene
   - Open appropriate gates/unlock appropriate doors
   - Designate individual to "flag down" EMS and direct to the location of the emergency
5. Member of the coaching staff must accompany the injured athlete to the emergency room. Bring athlete medical card and insurance information.
6. Activate communication tree (to notify medical personnel, administration, etc.)
7. Document the incident

Figure 1. Emergency action plan template and sample. Plan should be adjusted based on the availability of qualified medical personnel.

the athletic venue that will guide EMS personnel (Casa et al., 2013), in addition to the specific procedural steps that should be taken in a medical emergency. This EAP should be posted or easily accessible at the athletic venue, and all personnel should be familiar with the EAP at that venue, as well as know where the EAP is posted (Casa et al., 2013). In conclusion, having an athletic venue–specific EAP will ensure that appropriate steps are taken during a crisis.

Prior to distribution and implementation, all administration, as well as the appropriate legal counsel, should review and approve the EAP (Andersen et al., 2002). Legal counsel is often overlooked prior to implementation, but is necessary from a risk management and liability perspective for all parties who are directly involved with the plan. Once approved and documented, the EAP should be distributed to anyone involved with athletics at that organization, including organizational leaders, administrators, ATs, physicians, and coaches (Andersen et al., 2002). All members of the organization who may respond to an emergency must be properly educated. This education should ensure that personnel are aware of the EMS system that will respond, as well as of the emergency medical facilities where an athlete may be transported (Andersen et al., 2002). All members of the organization who may be called to respond in an emergency should be aware of their role when the EAP is activated.

Components of the EAP

The EAP is a step-by-step plan of action that will be taken in an emergency. Typically, the first step of the plan requires activating EMS (Andersen et al., 2002). In many locales, calling 911 activates EMS; however, a different emergency number must be used in some cases. The phones (landline and/or mobile) that will be used to activate EMS should also be identified at each facility and the location of the landline indicated on the athletic venue–specific map (Walsh, 2001). The athletic venue–specific map should include a visual overview of the immediate area, with streets clearly labeled. The EAP should include the information for the caller to provide to EMS personnel, and this should include (at a minimum) the specific athletic venue address and location (if adjacent to the address) with appropriate entrance point and cross streets identified. Also, EMS personnel should be provided with (1) identification of the caller

(e.g., Joe Smith, assistant athletic director), (2) number and condition of athletes affected (e.g., one football player who is unconscious), and (3) emergency treatment that has already been initiated (e.g., assistant coach has initiated CPR). It is important that the caller allow the dispatcher to end the call, because the dispatcher may need additional information before disconnecting.

Once EMS has been activated, the responders should continue to provide appropriate emergency care until EMS arrives (Andersen et al., 2002). It is particularly helpful to EMS that the caller meets the incoming responding vehicle near the entrance to the athletic venue identified in the EAP (Miller & Berry, 2011). This will guide EMS to the correct location and avoid a potentially life-threatening delay in care. When EMS does arrive, more condition-specific information, such as athlete medical history (if known) and the on-site treatment that was provided, should be given (Andersen et al., 2002). Ideally, the individual who rendered care on-site accompanies the athlete to the hospital with the appropriate medical documentation (i.e., insurance, emergency contact, medical history, allergy information). This is especially important in the absence of a parent or other family member, in which case the person responding can provide the hospital with personal information.

The probability of a successful outcome for a victim of sudden cardiac arrest, which is the most common cause of sudden death in athletes (Maron et al., 2009), is based on several time-sensitive intervals, which should be considered in the development of the EAP. These include (1) time from collapse to EMS activation, (2) time from collapse to the start of CPR, (3) time from collapse to delivery of the first shock of the AED, and (4) time from collapse to arrival of EMS (Drezner et al., 2007). Ideally, the organization or institution should plan in the EAP for less than 1 min to activate EMS and initiate high-quality CPR (American Heart Association, 2015). From there, it is recommended that the time from collapse to shock of the AED be 3 to 5 min (Pryor et al., 2014). If the time from collapse to shock could exceed this, then the organization or institution should obtain additional AED units to store in a facility (identified in the EAP) that is accessible to appropriate responders and would allow appropriate response time.

The EAP should also indicate the steps that should be taken after EMS transports the athlete. If the organization staffs any sports medicine personnel (e.g., AT, physician) to provide services, that person should be notified of the situation (Andersen et al., 2002). Furthermore, a parent or family member of the athlete should be contacted, as well as the athletic administration and/or coach (if not present during the emergency). Also, the EAP should indicate that appropriate documentation should be completed after the event (Anderson, 2006).

Equipment

One critical aspect of the EAP is that all responders know the types and locations of medical equipment that may be used in an emergency (Miller & Berry, 2011). The institution or organization should designate someone to be responsible for ensuring that emergency equipment (e.g., AED) is in good working order and that it is checked regularly (Andersen et al., 2002). It has been well established that early defibrillation with an AED is critical to survival in a cardiovascular event in the general population (American Heart Association, 2015). While many schools and recreational sports facilities have an AED, personnel must be trained in using it properly (Andersen et al., 2002).

Other equipment that may be need to be accessible in an emergency (based on state practice acts) includes CPR masks, splints, epi-pens for allergic reactions, flotation devices for a pool, and other devices. Anyone who may be responding to an emergency must be familiar with the location of emergency equipment and how to access it in an emergency.

Last, if medical personnel are not regularly in attendance at athletic events, coaches should have access to a first aid kit that includes the items necessary to act in an emergency based on their level of training. Also, athlete information including emergency contact information and underlying medical conditions that may be important to know in an emergency should be accessible on-site. The athlete information could be stored in a first aid kit; however, this may violate confidentiality if multiple people have access to the first aid kit.

Personnel

The personnel who may respond to an emergency at schools and recreational sports facilities will vary. Anyone involved with any practices, athletic events or competitions, skills instruction, and/or strength training and conditioning must be properly trained and prepared to handle a medical emergency (Andersen et al., 2002). The institution or organization should determine an EAP coordinator, who will be responsible for training and documenting the necessary components of EAP training (Drezner et al., 2007). Ideally, this individual should be the AT, as he or she has received the necessary formal education and training related to emergency preparedness (Casa et al., 2013). However, since an AT may not be employed at all athletic facilities, another individual should be identified for this role so that it remains a priority. As stated, all coaches should be trained in first aid, CPR, and the use of an AED (Casa et al., 2012; Drezner et al., 2007; Pryor et al., 2014).

Since various people may respond to an emergency, the implementation and rehearsal of the EAP is critical (Andersen et al., 2002). Each individual must understand his or her roles and responsibilities during an emergency (Miller & Berry, 2011), while the individual providing administrative oversight must be familiar with the whole plan. This starts with all involved parties reading and understanding the EAP, followed by practicing the EAP. Because each athletic venue is unique (location, available equipment, personnel), the EAP for each venue should be individually rehearsed with the responders at that venue (Miller & Berry, 2011). This may be best accomplished through planned in-service meetings and may involve local EMS. The ability to identify weaknesses in the plan prior to an actual event allows for a targeted quality improvement program so when a medical emergency occurs, all parties involved understand their collective responsibilities. No scheduled athletic activity, including strength training and conditioning sessions, should occur until the athletic administrator or league official has confirmed that all personnel associated with that activity are fully familiar with the EAP (Casa et al., 2013).

Review of the EAP

Once the EAP has been developed and approved, and available equipment and personnel who may be responding identified and educated, the EAP can be implemented for use. This fluid document will change regularly, as personnel, facilities, needs, or equipment will change over time (Andersen et al., 2002; Casa et al., 2013). Revisions may be made to the EAP after an initial rehearsal (Miller & Berry, 2011). One thing is for certain: The EAP should be reviewed and rehearsed annually, with documentation to support the rehearsal and any changes made (Andersen et al., 2002; Casa et al., 2013; Casa et al., 2012). The annual review and rehearsal of the EAP should always involve local EMS (Andersen et al., 2002) and should be led by the AT, if the institution or organization employs one (Casa et al., 2013). If any changes are made to the EAP at any time, administrative authorities and legal counsel must approve the newly revised EAP (Andersen et al., 2002). The updated EAP must be then disseminated to all appropriate personnel (Casa et al., 2013).

One strategy that has been suggested is the use of a "time out" prior to the start of athletic events (National Athletic Trainers' Association, 2012). A time out is a brief meeting in which athletic health care professionals gather prior to the start of the athletic event to review the venue's EAP (National Athletic Trainers' Association, 2012). For schools and recreational sports facilities not employing an AT, the use of the time out is imperative and should be led by the EAP coordinator and conducted with personnel who will be present and responsible for providing care at that athletic venue during an emergency. The time out checklist (Table 1) should include the role and location of all personnel, means of communication, designated hospital that will be used in an emergency, identification and location of emergency equipment, and any other issues that may affect the EAP (e.g., weather and special events; National Athletic Trainers' Association, 2012).

Conclusion

The vast use of resources, time, and finances necessary in almost every accident and the ensuing lawsuit can have a profound effect on any organization. In summary, all organizations and institutions that host athletic events should develop and implement an EAP

Table 1
Pre–Athletic Event Checklist

Checklist item	Description
Who Is Involved?	All those responsible for responding to a medical emergency meet before the start of each competition to review the emergency action plan.
Roles of Each Responder	Determine the role and location of each responder present.
Communication	Establish how communication will occur (i.e. radio, phone, voice commands, hand signals). What is the primary mechanism for communication? Is there a backup form of communication?
Presence of EMS?	An ambulance should be present at all high-risk events. Where is the ambulance located? What is the planned route for entrance/exit and is the normal route hindered (i.e., special event, crowd, construction)? Is the ambulance a dedicated unit or on standby? If an ambulance is not on-site, what is the mechanism for calling one?
Identification of Hospital	If emergency transport is needed, what is the designated hospital? If several choices locally, consider the most appropriate facility for the injury/illness in question.
Equipment Available	What emergency equipment is available, and where is it located? Has it been checked to ensure it is in good working order?
Other Factors	What other factors/issues could affect implementation of the emergency action plan (i.e., weather, special event, construction)?

Note. Adapted from the *National Athletic Trainers' Association Official Statement on Athletic Health Care Provider "Time Outs" Before Athletic Events,* by National Athletic Trainers' Association, 2012 (https://www.nata.org/sites/default/files/timeout.pdf).

(Almquist et al., 2008; Casa et al., 2013; Casa et al., 2012; Drezner et al., 2007; Pryor et al., 2014; Toresdahl et al., 2013). The health and safety of athletes are of utmost concern for administrators, coaches, parents, athletes, and health care professionals (Casa et al., 2013). Furthermore, organizations and institutions have a legal obligation to protect participants and themselves by ensuring prompt and appropriate emergency care (Andersen et al., 2002). Even expectations for appropriate emergency care at the youth sports level have become more rigorous (Casa et al., 2012). The absence of an EAP, which is paramount for responding to a medical emergency and providing appropriate care, may leave the institution or organization vulnerable to a legal liability situation (Casa et al., 2012).

A well-designed EAP includes several components, including communication, transportation, documentation, equipment, and personnel (Andersen et al., 2002). While the outline for an EAP exists, each institution or organization should develop the EAP in accordance with its unique needs and available resources. In addition to developing the EAP, the institution or organization may want to investigate other policies that affect risk management, including environmental issues (e.g., heat, cold, lightning), sudden cardiac arrest, and concussions. It is important that organizations and institutions are also cognizant of state legislation, such as concussion management and the prevention of sudden cardiac arrest, both of which are directly related to athlete health and safety. It is the responsibility of organizational leaders, coaches, and health care professionals to develop and implement EAPs for the safety of all participating athletes.

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