



APPROPRIATE CARE OF THE SPINE INJURED ATHLETE

Updated from 1998 document

Background: In 1998 the National Athletic Trainers' Association served as the host organization for an inter-association task force to develop guidelines for the care of the spine injured athlete. This 2015 document is an executive summary update of that 1998 document providing revised recommendations and key insights for the management of the cervical spine injured athlete. Recently, members of the original task force and additional spine trauma researchers discussed many changes in the current literature regarding pre-hospital treatment protocols for the cervical spine injured athlete-patient. These changes were the impetus for the development of the second inter-association task force.

Key Points:

- Traumatic spinal cord injury (SCI) is a devastating condition that merits concerted focus due to its high rates of morbidity and mortality.
- Approximately 12,500 new cases of SCI are reported in the United States each year. Nine percent of these cases are due to participation in sports and recreational activities.
- The athlete-patient with a suspected SCI presents challenges for medical providers that are not common with the general population. The best example for this comes with athletes in equipment-intensive sports such as football, ice hockey and lacrosse where the equipment worn for protective purposes creates a treatment barrier for basic or advanced life support skills requiring access to the airway and chest.
- The sports medicine team must work together as an efficient unit in order to accomplish its goals. In an emergency situation, the team concept becomes even more critical, because miscommunication may lead to errors with potentially catastrophic repercussions.

Recommendation 1: It is essential that each athletic program have an Emergency Action Plan (EAP) developed in conjunction with local EMS.

- Preparation is *essential* and should include education and training, maintenance of emergency equipment and supplies, appropriate use of personnel and formation and implementation of an EAP.
- Ideally, an athletic trainer should be on site during all sporting events. If medical personnel are not present, sports administrators should develop procedures for implementing the EAP and ensuring that all coaches are trained as first responders to ensure appropriate care prior to the arrival of trained medical personnel.

Recommendation 2: It is essential that sports medicine teams conduct a "Time Out" before athletic events to ensure EAPs are reviewed and to plan the options with the personnel and equipment available for that event.

Recommendation 3: Proper assessment and management of the spine injured athlete-patient will result in activation of the EAP in accordance with the level or severity of the injury.

Recommendation 4: Protective athletic equipment should be removed prior to transport to an emergency facility for an athlete-patient with suspected cervical spine instability.

Recommendation 5: Equipment removal should be performed by at least three rescuers trained and experienced with equipment removal at the earliest possible time. If fewer than three people are present, the equipment should be removed at the earliest possible time after enough trained individuals arrive on the scene.

Rationale for Equipment Removal

- Recent changes in some emergency medical services (EMS) protocols have impacted management of spine injuries in the field and during preparation for and transportation to hospital emergency departments. In the past, it was recommended that protective equipment (e.g., helmets and shoulder pads in football, hockey and lacrosse) be left in place for transport and removed upon arrival in the hospital Emergency Department.
- It is essential and now recommended that, when appropriate, in an emergency situation with equipment-intensive sports (e.g., helmets and shoulder pads in football, hockey and lacrosse), the protective equipment be removed prior to transport to the hospital. Rescuers should be able to recognize when it is NOT appropriate to remove equipment on field of play and have a plan to best manage the patient. The rationale for consideration of equipment removal on the field is rooted in, but not limited to, the following concepts:
 - **Advances in equipment technology**
 - **Equipment removal should be performed by those with the highest level of training.** In most cases, athletic trainers have been exposed to more equipment removal training than many other members of the medical team. As a result, individuals on the field may have a greater knowledge of equipment removal procedures than the hospital emergency department staff.
 - **Expedited access to the athlete-patient for enhanced provider care**
 - **Chest access is prioritized**

Recommendation 6: Athletic protective equipment varies by sport and activity; and styles of equipment differ within a sport or activity. Therefore, it is essential that the sports medical team be familiar with the types of protective equipment specific to the sport and associated techniques for removal of the equipment.

- A wide variety of facemasks, helmets and shoulder pads exist in the various sports. Members of the medical team should be skilled in facemask, helmet and shoulder pad removal. In an emergency situation, it is important to have access to the airway and chest. As the chest is not accessible when wearing shoulder pads, it is recommended that the medical team remove the shoulder pads on the field of play.

Recommendation 7: A rigid cervical stabilization device should be applied to spine injured athlete-patients prior to transport.

- A rigid cervical collar should be applied at the earliest and most appropriate time possible during pre-hospital procedures. With practice, cervical collars can be placed and removed with manual in-line stabilization and potentially minimal risk.
- The medical team needs to continue manual in-line stabilization even after the rigid cervical collar is applied. Several research studies have demonstrated that rigid cervical collars are not effective in controlling cervical spine motion in all planes of movement. Manual in-line stabilization must be maintained until the athlete-patient has been stabilized on a full body immobilization device and a head immobilization device has been applied.

Recommendation 8: Spine injured athlete-patients should be transported using a rigid immobilization device.

- The transport of the spine injured athlete-patient requires special considerations which may include, but are not limited to the mechanism of injury, size of the athlete-patient, equipment worn by the athlete-patient, and the number and skill level of the sports medical team members.
- Throughout the years different terminology has been used by pre-hospital medical care teams to describe procedures used to prevent iatrogenic spinal cord injuries. Initially spinal traction was used and was followed by spinal immobilization. Sports medical care teams must now recognize the concepts of **spinal motion restriction (SMR)** as compared to spinal immobilization. SMR implies that true spinal immobilization cannot be obtained even with the patient securely strapped to a spine board. Like spinal immobilization, the premise of SMR is to prevent further harm to a spinal cord or column injury.
- Criteria for the use of SMR guidelines and immobilization devices should include:
 - Blunt trauma with altered level of consciousness
 - Spinal pain or tenderness
 - Neurologic complaint (e.g., numbness or motor weakness)
 - Anatomic deformity of the spine
- High-energy mechanism of injury and any of the following:
 - Drug or alcohol intoxication

- Inability to communicate
 - Distracting injury
- Recent publications have expressed concern related to the use of the long spine board due to potential harmful effects to the patient if the patient remains on the long spine board for an extended period of time. However, in the case of a potentially spine injured athlete it is recommended that a long spine board or other immobilization device be used for transport.
- The ED medical team is encouraged to assess the athlete-patient on arrival to the ED. Following the assessment, the athlete-patient should be transferred off the spine board to the appropriate hospital bed for further care to decrease chances of pressure sore development and other potential detrimental side effects related to a prolonged length of time on the board.

Recommendation 9: Techniques employed to move the spine injured athlete-patient from the field to the transportation vehicle should minimize spinal motion.

- The spine injured athlete-patient should be transferred to the long spine board or vacuum mattress using a technique that limits spinal motion.
 - In the case of a supine positioned athlete, the medical team should use the 8-person lift (previously described as the six-plus lift) to move the athlete-patient to the long spine board.
 - The scoop stretcher may be employed to lift the supine athlete-patient from the field.
 - In the case of a prone positioned athlete, the medical team should position the spine board and use a log roll push technique to place the athlete-patient on to the long spine board.

Recommendation 10: It is essential that a transportation plan be developed prior to the start of any athletic practice or competition.

Recommendation 11: Spine injured athlete-patients should be transported to a hospital that can deliver immediate, definitive care for these types of injuries.

- The choice of the *most appropriate hospital* should be determined and written in the EAP.
- If definitive care is not readily available, spine injured athlete-patients should be transported to the nearest hospital for stabilization and possible air medical evacuation to the nearest trauma center. Attempts should be made to avoid this extra delay in definitive care as the patient in this scenario might have improved outcomes with expeditious definitive management.
- Emergency medical teams should keep in mind that every time the spine injured athlete-patient is moved, the chance for additional neurological compromise increases. For this reason, transfer of the athlete-patient in the pre-hospital setting and within the ED should be kept to a minimum and appropriate transfer devices should be used.
- ED staff must avail themselves of training modules in the event an athlete arrives with equipment in place.

Recommendation 12: It is essential that prevention of spine injuries in athletics be a priority and requires collaboration between the medical team, coaching staff and athletes.

Recommendation 13: The medical team must have a strong working knowledge of current research, as well as national and local regulations to ensure up-to-date care is provided to the spine injured athlete-patient.

Recommendation 14: It is essential that future research continue to investigate the efficacy of devices used to provide spinal motion restriction.

The National Athletic Trainers' Association (NATA) and the Inter-Association Task Force for Appropriate Care of the Spine Injured Athlete advise individuals, schools, athletic training facilities, and institutions to carefully and independently consider each of the recommendations. The information contained in the statement is neither exhaustive nor exclusive to all circumstances or individuals. Variables such as institutional human resource guidelines, state or federal statutes, rules or regulations, as well as regional environmental conditions, may impact the relevance and implementation of these recommendations. The NATA and the Inter-Association Task Force advise their members and others to carefully and independently consider each of the recommendations (including the applicability of same to any particular circumstance or individual). The foregoing statement should not be relied upon as an independent basis for care but rather as a resource available to NATA members or others. Moreover, no opinion is expressed herein regarding the quality of care that adheres to or differs from any of NATA's other statements. The NATA and the Inter-Association Task Force reserve the right to rescind or modify their statements at any time.

Participating Organizations

American Academy of Family Physicians
American Academy of Neurology
American Academy of Orthopaedic Surgeons – Committee on the Spine
American Academy of Pediatrics – Committee on Sports Medicine and Fitness
American College of Emergency Physicians
American College of Sports Medicine
American College of Surgeons – Committee on Trauma
American Medical Society for Sports Medicine
American Orthopaedic Society for Sports Medicine
Canadian Athletic Therapists' Association
College Athletic Trainers' Society
National Association of EMS Physicians
National Association of EMTs
National Association of Intercollegiate Athletics
National Association of State EMS Officials
National Athletic Trainers' Association
National Collegiate Athletic Association
National Federation of State High School Associations
North American Spine Society
Professional Football Athletic Trainers Society
United States Olympic Committee