

PREHOSPITAL CARE OF THE SPINE-INJURED ATHLETE

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OBJECTIVE:

The purpose of this presentation is to introduce the attendees of the ClinCon Clinical Conference on Prehospital Emergency Care to the significant advances that have been made by the Inter-Association Task Force for the Appropriate Care of the Spine-Injured Athlete.

LEARNING OBJECTIVES:

At the conclusion of this presentation the learner will:

- Be informed about the purpose and progress of the Inter-Association Task Force for the Appropriate Care of the Spine-Injured Athlete.
- Appreciate that any athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists.
- Understand the difference between helmet removal and face mask removal.
- Be aware of the tools available for face mask removal and appreciate the difficulties in using these tools.
- Understand the importance of maintaining spinal mobilization while equipment is being removed.
- Realize that the helmet and shoulder pads elevate an athlete's trunk when in the supine position, and that the removal of equipment is an all or none proposition.
- Understand that equipment does not need to be removed for assessment, treatment (including intubation, CPR, defibrillation, etc.), immobilization or transportation.
- Agree to the importance of developing a local emergency care plan for the pre-hospital care of the athlete with a suspected spine-injury, which includes communication with the institution's administration and those directly involved with the assessment and transportation of the injured athlete.
- Agree that all providers of pre-hospital care should practice and be competent in all of the skills that required for the safe and effective management of a spine-injured athlete, before they are needed in an emergency situation.
- Appreciate the complexity of different providers of pre-hospital emergency care operating under different protocols, and agree that standard guidelines need to be adopted.
- Understand the roles and responsibilities of each member of the sports medicine team, and the need for mutual respect and cooperation.

BACKGROUND:

In 1998, the National Athletic Trainers' Association (NATA) formed the Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete to develop guidelines for the appropriate management of the catastrophically injured athlete. The Inter-Association Task Force met in Indianapolis, Indiana, in May 1998, and again in Dallas, Texas in January 1999. More than twenty-five professional sports medicine organizations, including several EMS associations, were represented at each meeting. The mission of the first meeting was to develop guidelines for the pre-hospital management of the physically active individual with a suspected spinal injury. The purpose of the second meeting was for the task force to discuss equipment concerns with the manufacturers, and to develop a plan for producing and disseminating educational materials. After the guidelines and recommendations were written, a sub-group of the task-force was formed to write a formal document to be distributed as a monograph.

Every effort was made to base the monograph on current research. Where data were inadequate or unavailable, recommendations were based on the consensus and expertise of task force members. Techniques that have been scientifically validated were referenced where appropriate. Neither the work of the task force nor the information contained in the monograph are specific to football, but football players sustain a relatively higher incidence of spine injuries than other athletes and the sport of football often poses unique complications, such as the presence of protective equipment. Protective equipment has always been a source of controversy, in part because athletic protective equipment is so different from other protective equipment. Motorcycle helmets do not usually have a removable face mask, are not always snugly fit to the head, are worn without shoulder pads, and have other limitations, so after trauma they are routinely removed before transportation as to achieve spinal immobilization. However, a properly fitted football helmet holds the head and spine in position, provided the athlete is wearing shoulder pads. Thus, the information presented in the monograph is specific to the spine-injured athlete and can be applied not only to football but also to a variety of other sports. Some of the information contained in the monograph is beyond the scope of prehospital care, but is useful information and is valuable in understanding the complete process of caring for a spine-injured athlete.

THE ORIGINAL TASK FORCE GUIDELINES:

The following guidelines were developed by the Inter-Association Task Force for the Appropriate Care of the Spine-Injured Athlete (*June 04, 1998, Indianapolis, Indiana*).

- Any athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists.
- The athlete's airway, breathing and circulation, neurological status and level of consciousness should be assessed.
- The athlete should not be moved unless absolutely essential to maintain airway, breathing and circulation.
- If the athlete must be moved to maintain airway, breathing and circulation, the athlete should be placed in a supine position while maintaining spinal immobilization.
- When moving a suspected spine injured athlete, the head and trunk should be moved as a unit. One accepted technique is to manually splint the head to the trunk.
- The Emergency Medical Services system should be activated.

Face Mask Removal

- The face mask should be removed prior to transportation, regardless of current respiratory status.
- Those involved in the pre-hospital care of injured football players should have the tools for face mask removal readily available.

Football Helmet Removal

The athletic helmet and chin strap should only be removed...

- if the helmet and chin strap do not hold the head securely, such that immobilization of the helmet does not also immobilize the head.
- if the design of the helmet and chin strap is such that even after removal of the face mask the airway can not be controlled, or ventilation be provided.
- if the face mask can not be removed after a reasonable period of time.
- if the helmet prevents immobilization for transportation in an appropriate position.

Helmet Removal

Spinal immobilization must be maintained while removing the helmet.

- Helmet removal should be frequently practiced under proper supervision.
- Specific guidelines for helmet removal need to be developed.
- In most circumstances, it may be helpful to remove cheek padding and/or deflate air padding prior to helmet removal.

Equipment Removal

Appropriate spinal alignment must be maintained.

- There needs to be a realization that the helmet and shoulder pads elevate an athlete's trunk when in the supine position.
- Should either be removed, or if only one is present, appropriate spinal alignment must be maintained.
- The front of the shoulder pads can be opened to allow access for CPR and defibrillation.

CLINICAL APPLICATION:

These guidelines should provide athletic trainers, EMTs, and other providers of pre-hospital emergency care with a plan for the safe and effective management of an athlete with a suspected spine injury. The techniques and skills presented in these guidelines must be practiced and rehearsed. Each provider of pre-hospital emergency care should be aware of each other's roles and responsibilities. Cooperation and respect among the various providers is also needed.

CONCLUSIONS:

This task force encourages the development of a local emergency care plan regarding the pre-hospital care of the athlete with a suspected spine injury. This plan should include communication with the institution's administration and those directly involved with the assessment and transportation of the injured athlete.

All providers of pre-hospital care should practice and be competent in all of the skills identified in these guidelines before they are needed in an emergency situation.

PARTICIPANTS FOR TASK FORCE GUIDELINES:

These guidelines were developed as a consensus statement by;

Douglas M. Kleiner, PhD, ATC, FACSM, (Chair), *National Athletic Trainers' Association*; Jon L. Almquist, ATC, *National Athletic Trainers' Association Secondary School Athletic Trainers Committee*; Julian Bailes, M.D., *American Association of Neurological Surgeons*; John C. Biery, DO, FAOASM, FACSM, *American Osteopathic Academy of Sports Medicine*; Pepper Burruss, ATC, PT, *Professional Football Athletic Trainers' Society*; Alexander M. Butman, DSc, REMT-P, *National Registry of Emergency Medical Technicians*; Jerry Diehl, *National Federation of State High School Associations*; Robert Domeier, M.D., *National Association of Emergency Medical Services Physicians*; Kent Falb, ATC, PT, *National Athletic Trainers' Association*; Henry Feuer, M.D., *National Football League Physicians Society*; Jay Greenstein, D.C., *American Chiropractic Association Council on Sports Injuries & Physical Fitness*; Letha Y. Griffin, M.D., *American Orthopaedic Society for Sports Medicine*; *National Collegiate Athletic Association Committee on Competitive Safeguards and Medical Aspects of Sports*; Bob Hannemann, M.D., *American Academy of Pediatrics Committee on Sports Medicine and Fitness*; Margaret Hunt, ATC, *United States Olympic Committee*; Daniel Kraft, M.D., *American Medical Society for Sports Medicine*; James Laughnane, ATC, *National Athletic Trainers' Association College and University Athletic Trainers' Committee*; Connie McAdam, MICT, *National Association of Emergency Medical Technicians*; Dennis A. Miller, ATC, PT, *National Athletic Trainers' Association*; Michael Oliver, *National Operating Committee on Safety and Equipment*; Andrew N. Pollak, M.D., *Orthopaedic Trauma Association*; Dan Smith, DPT, ATC, *American Physical Therapy Association Sports Physical Therapy Section*; David Thorson, M.D., *American Academy of Family Physicians*; Patrick R. Trainor, ATC, *National Association of Intercollegiate Athletics*; Robert G. Watkins, M.D., *American Academy of Orthopaedic Surgeons Committee on the Spine*; Stuart Weinstein, M.D., *American College of Sports Medicine*; *North American Spine Society*; *Physiatric Association of Spine, Sports & Occupational Rehabilitation*;

RECOMMENDATIONS FOR APPROPRIATE CARE OF THE SPINE-INJURED ATHLETE:

- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete commends the current and ongoing commitment of helmet and face guard manufacturers for integrating safety in the development of their products.
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete encourages manufacturers to continue to support research promoting helmet and face guard safety.
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete recommends that manufacturers provide information to purchasers on the best methods for the emergency removal of the face guard.
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete recommends that NOCSAE develop equipment standards that would allow for the emergency removal of helmets and face guards.
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete recommends that helmets and face guards that meet current NOCSAE standards be worn by all football, lacrosse, baseball, and softball players.
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete recommends that football helmet face guards be attached by loop straps and not bolted on, in order to facilitate appropriate emergency management by medical personnel (from the May 1998 meeting in Indianapolis, Indiana).
- The Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete recommends that loop straps be made of material that is easily cut, and that the producers of loop straps provide appropriate tools to cut/remove the loop straps that they manufacture (from the May 1998 meeting in Indianapolis, Indiana).

PARTICIPANTS FOR TASK FORCE RECOMMENDATIONS:

These guidelines were developed as a consensus statement by;

Douglas M. Kleiner, PhD, ATC, FACSM, (Chair), *National Athletic Trainers' Association*; Jon L. Almquist, ATC, *National Athletic Trainers' Association Secondary School Athletic Trainers' Committee*; Julian Bailes, MD, *American Association of Neurological Surgeons*; John C. Biery, DO, FAOASM, FACSM, *American Osteopathic Academy of Sports Medicine*; T. Pepper Burruss, ATC, PT, *Professional Football Athletic Trainers' Society*; Alexander M. Butman, DSc, NREMT-P, *National Registry of EMTs*; Michael Cendoma, MS, ATC, *Sports Medicine Concepts*; Ron Courson, ATC, PT, *Athletic Training Emergency Care*; Jerry Diehl, *National Federation of State High School Associations*; Robert Domeier, MD, *National Association of EMS Physicians*; Kent Falb, ATC, PT, *National Athletic Trainers' Association*; Henry Feuer, MD, *National Football League Physicians Society*; Jay Greenstein, D.C., *American Chiropractic Board of Sports Physicians*; Bernard A. Griesemer, MD, FAAP, *American Academy of Pediatrics Committee on Sports Medicine and Fitness*; Letha Y. Griffin, MD, *National Collegiate Athletic Association Committee on Competitive Safeguards and Medical Aspects of Sports*; Michael Hanley, ATC, *National Athletic Trainers' Association College and University Athletic Trainers' Committee*; Stanley Herring, MD, FACSM, *American College of Sports Medicine, North American Spine Society*; Margaret Hunt, ATC, *United States Olympic Committee*; Daniel Kraft, MD, *American Medical Society for Sports Medicine*; Connie McAdam, MICT, *National Association of Emergency Medical Technicians*; Dennis A. Miller, ATC, PT, *National Athletic Trainers' Association*; Michael Oliver, *National Operating Committee on Safety and Equipment*; Andrew N. Pollak, MD, *Orthopaedic Trauma Association*; Robb Rehberg, ATC, CSCS, NREMT, *Athletic Training Emergency Care*; Jay Rosenberg, MD, *American Academy of Neurology*; Kevin Shea, MD, *American Orthopaedic Society for Sports Medicine*; Dan Smith, DPT, ATC, *American Physical Therapy Association Sports Physical Therapy Section*; David Thorson, MD, *American Academy of Family Physicians*; Patrick R. Trainor, ATC, *National Association of Intercollegiate Athletics*; Joe Waeckerle, MD, *American College of Emergency Physicians*; Robert G. Watkins, MD, *American Academy of Orthopaedic Surgeons Committee on the Spine*; Stuart Weinstein, MD, FACSM, *Physiatric Association of Spine, Sports & Occupational Rehabilitation, American Academy of Physical Medicine and Rehabilitation, American College of Sports Medicine*; Jack Wilberger, MD, *American College of Surgeons – Committee on Trauma*

NATIONAL FOOTBALL LEAGUE GUIDELINES:

The guides set forth by the NFL for game officials to use during serious on-field injuries include:

- Players and coaches must go to and remain in the bench area. Direct all players and coaches accordingly. Always ensure adequate lines of vision between the medical staff and all available emergency personnel.
- Attempt to keep players a significant distance away from the seriously injured player(s).
- Do not allow a player to roll an injured athlete over.
- Do not allow players to assist a teammate who is lying on the field; i.e. removing the helmet or chin strap or attempting to assist breathing by elevating the waist.
- Do not allow players to pull an injured teammate or opponent from a pile-up.
- Once the medical staff begins to work on an injured player, all members of the officiating crew should control the total playing field environment and team personnel and allow the medical staff to perform services without interruption or interference.
- Players and coaches should be appropriately controlled to avoid dictating medical services to the certified athletic trainers or team physicians or taking up their time to perform such service.

Note: Officials should have a reasonable knowledge of the location of emergency personnel and equipment at all stadiums.

SUMMARY OF THE MONOGRAPH:

Injuries to the spine are relatively rare in athletics. However, when they do occur, they must be treated promptly and correctly. Certified athletic trainers and other providers of prehospital care must know which procedures to use in these situations. They must have the necessary equipment readily available and be proficient in its use. The regular practice of immobilization of athletes with potential cervical spine injuries is a must for individuals who expect to perform these important tasks in an actual emergency.

Care of the injured athlete should follow a carefully designed protocol. The athlete's airway, breathing, and circulation; neurological status; and level of consciousness should be assessed, and the EMS system should be activated.

Because unconscious individuals are unable to speak, they are unable to tell the rescuer whether they have a spinal injury. Therefore, all unconscious athletes in a situation that may have included a collision or a fall and conscious athletes with any sign or symptoms that suggest cervical spine trauma must be treated as if they have a cervical spine injury.

Any athlete suspected of having a head or spinal injury should not be moved unless absolutely essential to maintain airway, breathing, and circulation. If the athlete must be moved to maintain airway, breathing, and circulation, the athlete should be placed in a supine position while spinal immobilization is maintained.

In the conscious athlete, a possible cervical spine injury must be identified early. Athletes who display spasm, tenderness, or loss of active range of motion should be suspected of having significant cervical spine trauma and should be treated accordingly. Cervical spine injuries may or may not have immediately observable neurological sequelae.

Athletes with no neurological signs or symptoms and no findings that suggest trauma to the cervical spine can be safely moved to a more suitable site for further evaluation. However, if there is any question as to medical status, it is best to err on the side of safety and to treat the injury as if it were a significant cervical spine injury.

When it becomes necessary to transport the athlete, the head and trunk should be moved as a unit. It takes many people to correctly move an injured athlete, with one rescuer responsible for stabilizing the athlete's head and cervical spine; as a general rule, this should be the most qualified and experienced person on the scene. It is imperative that this rescuer maintains cervical stabilization throughout the procedure. The rescuer who is stabilizing the head must continue to keep it stabilized until the athlete is completely immobilized with an appropriate device.

Injuries to the head and neck are difficult to evaluate and treat in the athletic environment. To adequately prepare for these and other critical injuries to athletes, an emergency plan should be developed. Providers of emergency care must make sure to have the proper equipment readily available and that it is in good working order.

The sports medicine team must be prepared for any emergency; preparation includes education and training, maintenance of appropriate emergency equipment and supplies, utilization of appropriate personnel (including certified athletic trainers), and the formation and implementation of an emergency plan.

Emergency plans should be comprehensive and practical, yet flexible enough to adapt to any emergency situation. The emergency plan must be established, approved, revised, and rehearsed on a regular basis. Each emergency plan may vary but should include information on education, emergency equipment, personnel, and communication and a rehearsal schedule.

The emergency plan should also address equipment issues, which are particularly important in managing and packaging persons with suspected head or cervical spine injuries. Each member of the emergency team should be knowledgeable and practiced in the function and operation of emergency equipment. It would be helpful for each member of the sports medicine team to be multi-skilled and cross-trained in the use of all emergency equipment. For example, it has been suggested that practice with tools required for face mask removal of the catastrophically injured football player is essential.

Emergency medical personnel must take extreme caution when evaluating and treating an athlete with a suspected head or spinal injury. The proper management of head and neck injuries can prevent further damage from occurring.

REFERENCE FOR THE MONOGRAPH:

Kleiner DM, Almquist JL, Bailes J, Burruss P, Feuer H, Griffin LY, Herring, S, McAdam C, Miller D, Thorson D, Watkins RG, Weinstein S. *Prehospital Care of the Spine-Injured Athlete: A Document from the Inter-Association Task Force for Appropriate Care of the Spine-Injured Athlete*. Dallas, Texas, National Athletic Trainers' Association, March, 2001.

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TASK FORCE WEBSITE:

<http://www.spineinjuredathlete.org>