CATASTROPHIC INJURY PREVENTION IN SPORT

Recognize the signs. Respond immediately. Save a life.

EVERY ATHLETIC PROGRAM NEEDS A WRITTEN, VENUE-SPECIFIC, REHEARSED EMERGENCY ACTION PLAN (EAP).

1. CONCUSSION & TRAUMATIC BRAIN INJURY (TBI)

PREVENTION AND EDUCATION

- Sport related concussion is a traumatic brain injury caused by a direct blow to the head, neck or body resulting in force being transmitted to the brain.
- Signs and symptoms may be present immediately or evolve over minutes to hours.
- Teach safe playing techniques and discourage intentional headfirst contact.
- Recognize that concussion can occur without loss of consciousness.
- Educate athletes to report symptoms immediately.

■ **Warning signs: Including but not limited to headache, dizziness, confusion, memory problems, vomiting, worsening drowsiness, seizure, unequal pupils, or deteriorating consciousness.**

MANAGEMENT

- Remove the athlete from participation immediately; no same-day return after suspected concussion.
- Activate EMS for worsening consciousness, repeated vomiting, seizure, suspected skull fracture, or other signs of severe brain injury.
- Stabilize and monitor the athlete; arrange medical evaluation.
- Require healthcare-provider clearance and a graduated return-to-sport process before full participation.
- Create return to learn management plan for athlete in recovery

2. CERVICAL SPINE (C-SPINE) INJURY

PREVENTION AND EDUCATION

- Teach safe tackling, blocking, and contact techniques.
- Prohibit dangerous headfirst contact.
- Ensure staff are trained in spinal injury recognition and emergency response.

■ **Warning signs: Neck pain, midline tenderness, limb weakness or numbness, paralysis, or altered consciousness following trauma.**

MANAGEMENT

- Activate the EAP and EMS immediately.
- Minimize movement and maintain manual stabilization of the head and neck.
- Do not move the athlete unless necessary to protect the airway or escape immediate danger.
- Do not remove equipment or attempt spinal realignment unless directed by trained personnel following established protocols.
- Monitor airway, breathing, and circulation.

3. SUDDEN CARDIAC ARREST

PREVENTION AND EDUCATION

- Promote appropriate preparticipation cardiovascular screening.
- Ensure immediate access to automated external defibrillators (AEDs).
- Train staff in CPR and AED use; conduct regular emergency drills.

■ **Warning signs: Sudden collapse, unresponsiveness, absent or abnormal breathing, or seizure-like activity.**

MANAGEMENT — EVERY SECOND COUNTS

- Activate EMS and direct someone to retrieve the AED.
- Begin high-quality CPR immediately.
- Apply the AED as soon as available and follow its prompts.
- Continue CPR and AED use until the athlete recovers or EMS takes over.

Goal: Minimize collapse-to-defibrillation time, ideally to less than three minutes.

4. EXERTIONAL HEAT ILLNESS

PREVENTION AND EDUCATION

- Exertional heat illness results from an elevated core temperature from exercise that the body cannot dissipate adequately
- Implement progressive heat acclimatization protocols
- Monitor environmental conditions and adjust practice intensity, duration, and rest breaks.
- Provide unrestricted access to fluids and appropriate recovery opportunities.
- Have a prepared cold-water immersion setup available for suspected exertional heat stroke.

■ **Warning signs: Unusual fatigue, headache, dizziness, nausea, confusion, poor coordination, collapse, or altered mental status during or after exertion.**

Management:

- Stop activity and assess immediately.
- Suspected exertional heat stroke is a life-threatening emergency.
- Activate EMS, obtain a rectal temperature by a trained healthcare professional when indicated, and initiate rapid whole-body cold-water immersion.
- When exertional heat stroke is suspected, cool rapidly on site before transport when medically feasible; follow the established “cool first, transport second” protocol.

5. EXERTIONAL RHABDOMYOLYSIS

PREVENTION AND EDUCATION

- Exertional rhabdomyolysis is a process in which muscle cell damage occurs due to overexertion during physical activity
- Exertional rhabdomyolysis can lead to severe organ damage, including acute kidney failure (end-stage or severe renal failure) and life-threatening systemic complications.
- Progress conditioning gradually, especially after breaks from training.
- Avoid sudden, excessive exercise volume and intensity.
- Provide recovery time, appropriate hydration, and heat-management measures.
- Never use exercise as punishment.

■ **Warning signs: Severe muscle pain, swelling or cramping. Disproportionate weakness, reduced range of motion, or dark, tea-colored urine after intense exercise. Symptoms may develop hours or days later.**

MANAGEMENT

- Stop exercise immediately and obtain prompt medical evaluation.
- Obtain emergency assessment for severe symptoms, dark urine, significant weakness, or suspected complications.
- Do not assume that normal-looking urine or mild symptoms rule out rhabdomyolysis.
- Return to training only after medical clearance and an individualized, gradual progression.

6. SICKLE CELL TRAIT (SCT) & EXERTIONAL SICKLING

PREVENTION AND EDUCATION

- Appropriately inform others of athlete’s SCT status
- Provide education on early recognition of exertional sickling
- Allow gradual conditioning, appropriate work-to-rest ratios, hydration, and recovery.
- Modify activity for illness, heat, altitude, or other relevant risk factors.

■ **Warning signs: Sudden muscle weakness, unusual fatigue, muscle cramping or pain, difficulty recovering, or collapse during intense exertion. Symptoms may progress rapidly.**

MANAGEMENT

- Treat suspected exertional sickling as a medical emergency.
- Stop activity, activate EMS, and communicate the concern for possible exertional sickling.
- Administer supplemental oxygen if available and indicated under the emergency protocol.
- Monitor airway, breathing, and circulation; begin CPR and use an AED if indicated.
- Do not encourage the athlete to push through symptoms or assume the episode is ordinary cramping.

7. EXERTIONAL OR NON-EXERTIONAL COLLAPSE

PREVENTION AND EDUCATION

- Ensure all staff recognize collapse as a potentially life-threatening event.
- Maintain an accessible EAP and clear emergency communication procedures.
- Know the locations of AEDs, emergency equipment, and EMS access points.

■ **Warning signs: Sudden collapse, unresponsiveness, abnormal breathing, confusion, seizure, or inability to stand or walk normally.**

MANAGEMENT

- Stop activity and immediately assess responsiveness and normal breathing.
- Activate EMS for unexplained collapse or suspected serious illness.
- If unresponsive and not breathing normally, begin CPR and apply an AED.
- Consider cardiac arrest, heat stroke, head or neck injury, exertional sickling, asthma, and metabolic emergencies.
- Do not assume the athlete is simply exhausted or allow an unexplained collapse to go unevaluated.

8. ASTHMA EMERGENCY

PREVENTION AND EDUCATION

- Identify athletes with asthma and maintain an individualized asthma action plan.
- Ensure prescribed rescue medication is accessible, and staff know how to assist according to the athlete's plan and applicable policies.
- Recognize exercise, allergens, respiratory infections, and environmental conditions as possible triggers.

■ **Warning signs: Wheezing, persistent coughing, chest tightness, shortness of breath, difficulty speaking, or poor response to prescribed rescue medication.**

MANAGEMENT

- Stop exercise and assist the athlete with their prescribed rescue medication according to their asthma action plan.
- Activate EMS for severe breathing difficulty, blue or gray lips, inability to speak normally, altered consciousness, or inadequate response to rescue treatment.
- Monitor breathing and be prepared to initiate CPR if the athlete becomes unresponsive and is not breathing normally.

9. DIABETIC EMERGENCY

PREVENTION AND EDUCATION

- Know which athletes may require diabetes-related emergency support
- Establish an individualized diabetes management plan.
- Coordinate exercise, meals, medication, glucose monitoring, and access to fast-acting carbohydrates.

■ **Warning signs of hypoglycemia: Sweating, shakiness, hunger, confusion, unusual behavior, weakness, or loss of consciousness.**

■ **Warning signs of severe hyperglycemia or diabetic ketoacidosis (DKA): Excessive thirst, frequent urination, vomiting, abdominal pain, deep or rapid breathing, fruity-smelling breath, or altered consciousness.**

MANAGEMENT

- Check blood glucose when feasible and follow the athlete's diabetes action plan.
- Per your training, follow action plan to treat athlete's glucose level. Seek medical assistance.
- Activate EMS for unconsciousness, seizure, severe symptoms, or suspected diabetic ketoacidosis.

THE UNIVERSAL EMERGENCY ACTION PLAN

Every venue. Every team. Every time.

RECOGNIZE

Identify the emergency and stop activity.

ACTIVATE

Call 911 or the local EMS number and initiate the venue-specific EAP.

ASSIGN ROLES

Direct someone to meet EMS and someone to retrieve emergency equipment.

PROVIDE CARE

Deliver appropriate first aid, CPR, AED use, cooling, or stabilization within your training.

COMMUNICATE

Give EMS the location, mechanism of injury, observed signs, and care provided.

DOCUMENT AND REVIEW

Record the event, notify appropriate personnel, and evaluate the response.

BEFORE EVERY SEASON

Verify emergency access routes, AED readiness, communication systems, equipment availability, staff training, and rehearsed response procedures.

REFERENCES & FURTHER EDUCATION

· National Athletic Trainers· Association. Emergency Action Plan Development and Implementation in Sport (2024). https://pmc.ncbi.nlm.nih.gov/articles/PMC11220767/

· NATA. Position Statements. https://www.nata.org/news-publications/statements/nata-position-statements

· NCAA Sport Science Institute. Preventing Catastrophic Injury and Illness in College Sports. https://www.ncaa.org/what-we-do/health-safety-and-performance/preventing-catastrophic-injury-and-illness/

· NATA. Interassociation Recommendations on Preventing Catastrophic Injury and Death in Collegiate Athletes. https://www.nata.org/press-release/interassociation-recommendations-preventing-catastrophic-injury-and-death-collegiate-athletes

· EDUCATE. PREPARE. RECOGNIZE. RESPOND.

This educational flyer supports, but does not replace formal emergency action plans, professional medical judgment, current clinical guidelines, or EMS direction.

All suspected life-threatening emergencies require immediate assessment and appropriate emergency response.

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