INTER ASSOCIATION TASK FORCE ON PREVENTING SUDDEN DEATH IN STRENGTH AND CONDITIONING ACTIVITIES

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Disclaimer

- One of several authors for *Preventing Sudden Death in Sport and Physical Activity*, Jones & Bartlett.

- Some of the information provided here came from the book.
IATF Host

- USOC- Colorado Springs
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- National Athletic Trainers' Association
- National Strength and Conditioning Association
- Korey Stringer Institute
- NCAA
Participants
There have been 21 non-traumatic deaths since 2000:

- 10 SCT, 4 EHS, 1 Asthma, 6 SCD;
  - 18 during conditioning, 3 during practice.
- 23 Exertional Sickling deaths in 12 years.
- There has not been one traumatic death in college football in that time.
Why are we allowing it to happen?

- Over burdening athletes with non-stop activity;
- Casual attitude with “collateral damage”;
- No recovery period, especially if season was unsuccessful;
- Creation of “irrational intensity” not consistent with needs of the sport;
- Lack of science based programs (“make them tougher”).
What is happening and why?
What can we do when it does happen?
How can we stop this from happening?
Purpose

- Jeff Anderson, MD, Chair, NCAA Competitive Safeguards and Medical Aspects of Sports (CSMAS), and Team Physician, U. of Connecticut

  “Serious attention needs to be paid to the manner in which some of our student-athletes are being asked to train.”
James Knochel, MD, JAMA, 1975- “Dog Days and Siriasis- How to Kill a Football Player”

- 7 ways to kill a FB player- practice time, no water / tepid, sodium chloride/ no water, diuretics, full pads, amphetamines.
- “Heat acclimatization is achieved by gradual, step-wise increments.”
- “Since it is almost always preventable, acknowledgement of it’s occurrence is embarrassing, and therefore under-reported”.

Not a New Problem
Since 2000, in NCAA FBS, conditioning and training is the only setting for non-traumatic death.

- These incidents continue to be considered “isolated rather than serial”, and are blamed on “predispositions”.

Current Problem
Belief that we are mirroring sport but merely “manufacturing” intensity.

- FB work: rest is 1:6; workouts are more like 1:1.
- Doesn’t fit in any scientific approach to conditioning.
- 11 of 21 deaths are in the first 2 days of activity. Are we doing too much too soon?
What is Happening?

- Four most common causes of non-traumatic death are:
  - Sudden Cardiac Death;
  - Exertional Heat Stroke;
  - Exertional Sickling;
  - Asthma.
Sudden Cardiac Death / Arrest

“Sudden death of an individual within 1 hour after exercise due to cardiovascular disorder”.

SCD is the leading cause of death in young athletes during exercise.

Distribution -
- 2 : 1 M : F
- 3 : 1 B : W
- 1 : 13,000 male black athletes
- 1 : 7000 male basketball
Sudden Cardiac Death

- Causes -
  - Hypertrophic Cardiomyopathy - 33%
  - Coronary Artery Anomalies - 17%
  - Myocarditis
  - Arrhythmogenic Right Ventricular Cardiomyopathy
  - Aortic Ruptures w/ Marfans
  - Ion Channel Disorders (Long/ Short QT, etc.)
Sudden Cardiac Death

- Prevention-
  - Health History and Physical Exam
  - ECG-
    - Controversial (interpretation, $$$)
    - How often? Upon matriculation? Yearly?
    - Who?
  - Recognition
  - AED/ CPR
“Medical emergency involving life-threatening hyperthermia (rectal temp > 40.5° C [105° F]) w/ concomitant CNS dysfunction.”

- From 1975-95, there were 24 EHS deaths.
- From 1996-2009, there were 42 EHS deaths.
- Even with the new technology in sport drinks, clothing and our own knowledge, we have regressed.
Exercise is the culprit, as it can occur in any condition(s).

Prevention - be aware of both extrinsic (ambient temp, uniform/clothing, work: rest, fluids, medical conditions) and intrinsic factors (increases in intensity, dehydration, diuretic use, inadequate acclimitization).
Exertional Heat Stroke

- Prevention-
  - Hydration-
    - Urine color/ specific gravity.
  - Preparation- have a plan; prepared cold immersion.
  - Recognition- core temp, outward signs.
  - Activation of EMS.

- BEGIN COOLING RIGHT AWAY PRIOR TO TRANSPORT- first 30 minutes are critical.
  - Use cold, circulated water.
Rectal temperature “controversy” -
- Rectal temperature is the only accurate measurement.
- Position statement allows for start of cooling in lieu of obtaining a rectal temperature.
Sickle Cell Trait- inherited genetic disorder; increased exercise intensity causes red blood cells to sickle when they release $O_2$.

- Causes a log jam in the small blood vessels which results in fulminent ischemic rhabdomyolysis.
- Thought of as being a concern with African-Americans but is technically “malarial”.
  - 8 % AA; .5 % Hispanic; .2 % Caucasian.
SCT has resulted in 10 of the 16 non-traumatic deaths in college FB since 2000.

- First well-known case was in 1974 (U. of CO).

- All deaths were the result of conditioning drills and not playing.

- Not heat related.
Exertional Sickling

- Prevention-
  - Know which of your athletes has SCT.
  - Understand the S & S’s.
  - Communicate to S & C staff and sport coaches so that they are aware of who has SCT.
  - Don’t let your athletes get into a situation where they end up in distress.
Asthma

- Defined by National Heart, Lung, and Blood Institute as “lung disease in which the airway becomes inflamed and restricted to airflow, along with bronchoconstriction”.
- Extrinsic factors- allergens, pollutants, smoke, OTC NSAIDS.
- S & S include difficulty speaking, chest pain, wheezing, shortness of breath, and accessory muscle breathing.
First and foremost is prevention (#1 domain of AT).

- Evaluation-
  - Health History/ Physical Exam AND follow-up.
  - Specialist/ special testing as necessary.
Communication

- Between medical staff.
  - Follow-up from PPPE, specialist visit
- Between medical staff, sport coaches, and S & C staff.
  - Individual medical concerns (SCT, asthma, hx of EHS, hx of syncope, etc.
  - Approval for sharing information
Emergency Action Plans (EAP’s) -
- NATA Position Statement.
- NCAA guideline/recommendation.
- Legal standard!?
- Develop, practice, implementation.
- Involve administrators, facility staff, public safety, local EMS.
Venue specific documents-
- Indicate emergency phones, permanent AED locations, emergency access, lightening shelters.
- Emergency phone numbers and procedure (on-campus vs. off-campus dialing).
- Venue specific signage.
- Venue activity specific plans, as necessary.
Preparation

- Emergency “team” and roles-
  - Physicians
  - AT’s
  - Public Safety officers
  - Local EMS
  - Coaches/ Staff
What is/are the role each individual plays in each situation?

1. Establish safety of the scene and immediate care of the victim.
2. EMS activation -
   - On-campus vs. off-campus phones? Information to provide (critical). Directions.
3. Equipment retrieval.
4. EMS coordination (direct to the scene).
Preparation

- Emergency equipment-
  - “Time Out”
  - Availability.
  - Location.
  - Operating condition.

- Information availability-
  - Posted prominently in each venue.
  - Telephone instructions at every telephone.
  - Pocket cards.

- Away contest instructions in case of an injury/emergency.
Discuss the workout goals/plan prior to starting.

- NCAA- “the athletic trainer has the unchallengeable authority to stop any workout they deem unsafe.”
  - Does that give us the “ultimate responsibility”? 
  - Do we have to protect our S-A’s from our own staff?

Read and understand the NATA position statements and NCAA/NFHS guidelines.

- Legal responsibility?
- Moral responsibility?
Watch for outward S & S of distress-
- Standing, breathing normally.
- Standing, bent at waist, hands on the knees.
- Kneeling on one knee.
- On all fours.
- Lying on the ground.

Full disclosure, I have in the past, ignored these S & S, and am thankful that I never had to deal with a tragedy.
Don’t be the next to regret not doing something;
  - Don’t have any regrets for your actions or failure to act;
  - Don’t be the news story.

THESE ARE PREVENTABLE DEATHS.
Overview of Consensus Statement

- Progressive acclimatization.
- Gradual introduction of new conditioning activities.
- Do not use exercise and conditioning as a form of punishment.
- Ensure proper education, experience, and credentialling of strength and conditioning staff.
Provide for appropriate medical coverage.
Develop and practice Emergency Action Plans.
Cognizant of key medical conditions.
Administration of strength and conditioning program by proper staff.
Partnership of recognized professional organizations.
Ensure proper continuing education opportunities for the entire coaching and medical team.
Thank You

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