ENVIRONMENTAL HEAT ISSUES

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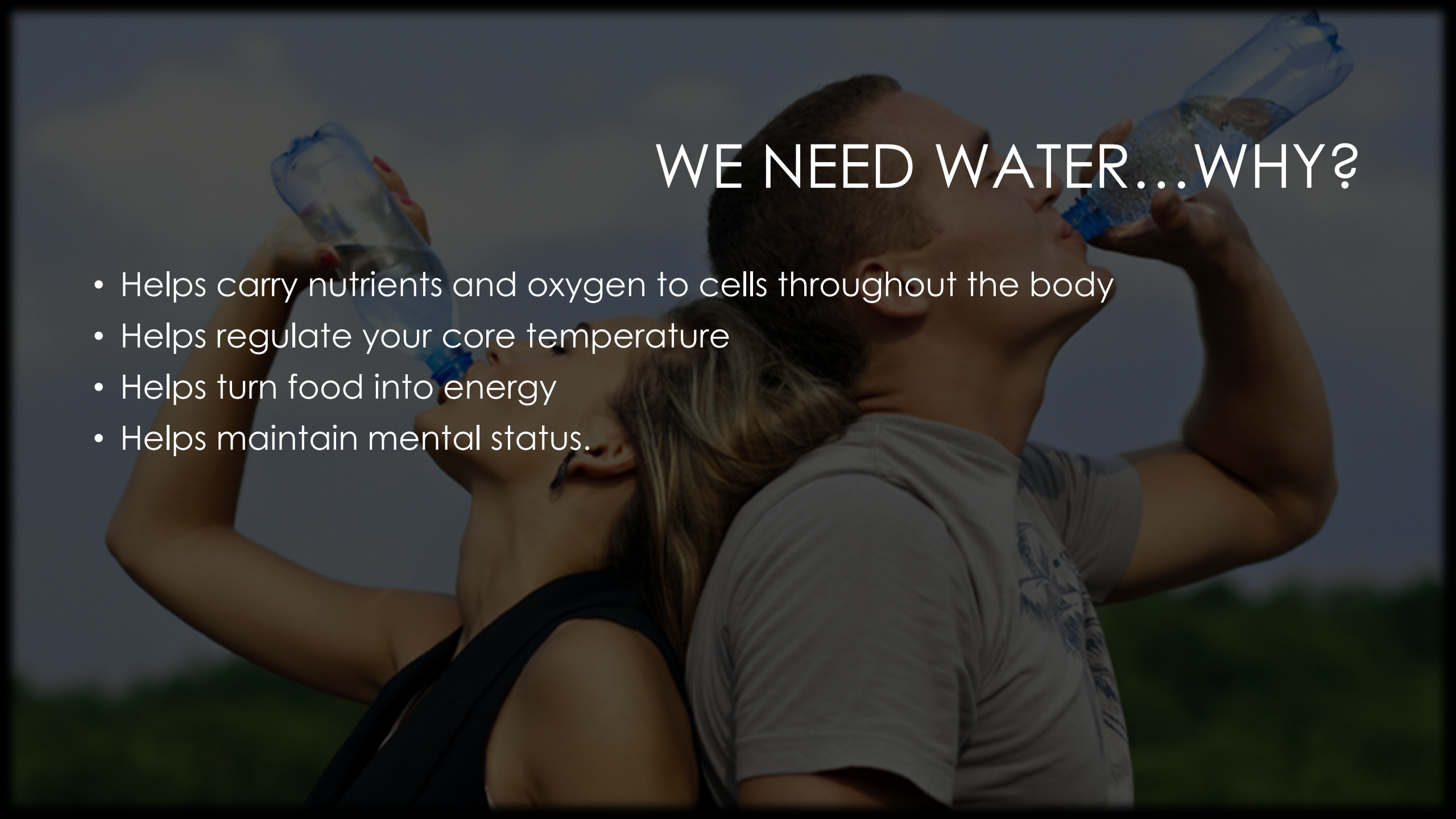
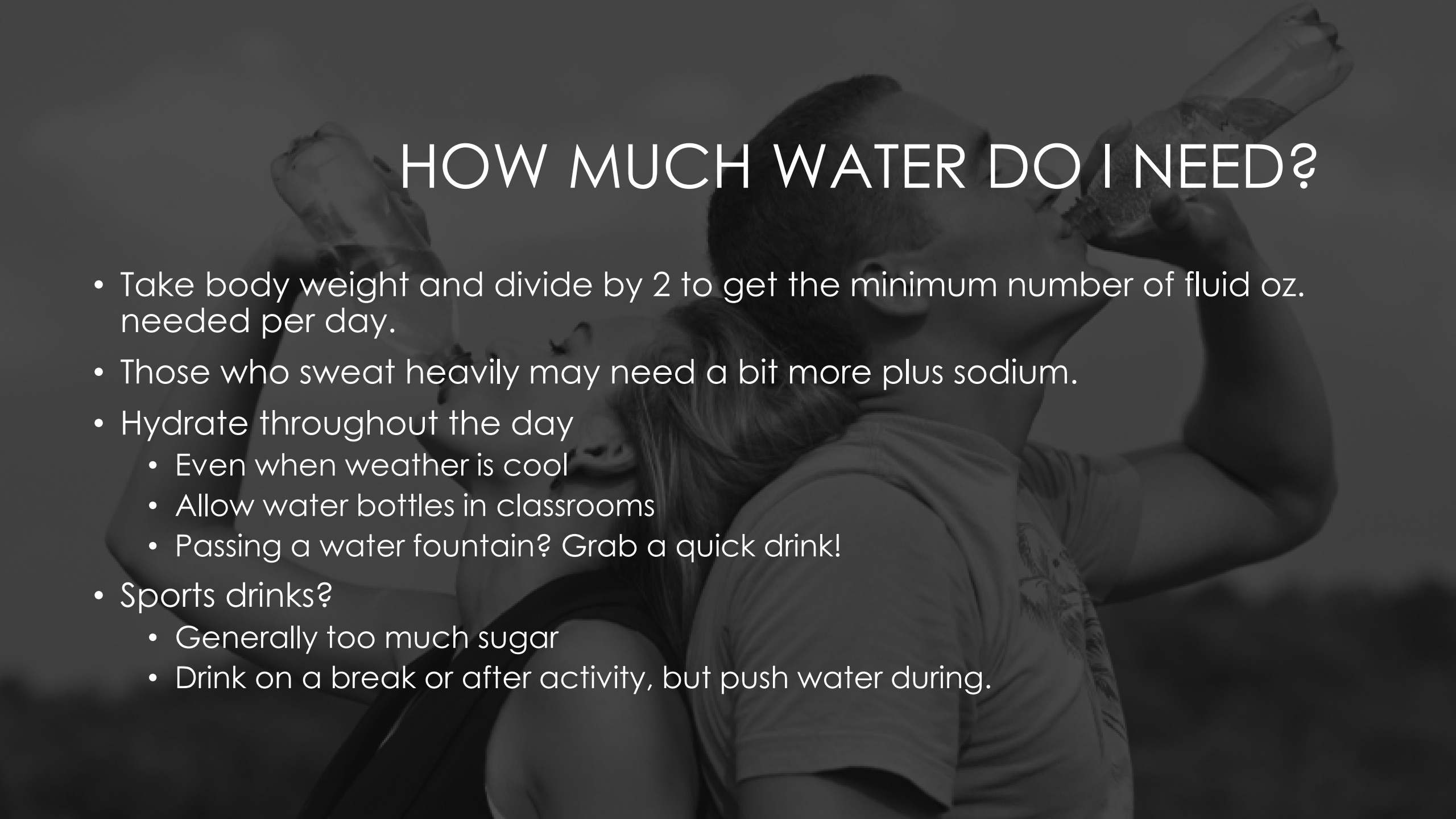
DEHYDRATION

- As little as 2% loss of fluid can cause:
  - Noticeable thirst
  - Muscle Cramps
  - Weakness
  - Decreased Performance
  - Nausea
  - Headache
  - Fatigue
  - Lightheadedness/Dizziness
  - Difficulty paying attention



WE NEED WATER…WHY?

- Helps carry nutrients and oxygen to cells throughout the body
- Helps regulate your core temperature
- Helps turn food into energy
- Helps maintain mental status.



HOW MUCH WATER DO I NEED?

- Take body weight and divide by 2 to get the minimum number of fluid oz. needed per day.
- Those who sweat heavily may need a bit more plus sodium.
- Hydrate throughout the day
  - Even when weather is cool
  - Allow water bottles in classrooms
  - Passing a water fountain? Grab a quick drink!
- Sports drinks?
  - Generally too much sugar
  - Drink on a break or after activity, but push water during.

WBGT GUIDELINES

- AAA recommends the use of the Wet Bulb Globe Thermometer (WBGT) to measure heat stress.
- A list of heat stress monitors is listed on the AAA website under the Sports Medicine tab.
- Set up your heat stress monitor at least 30 minutes before practice to get an accurate reading.
- Monitor throughout practice.

- AAA has teamed up with the National Weather Service in Arkansas to create a page called Heat Wave.
- Gives 3-day WBGT forecast.
- **https://www.weather.gov/lzk/hwave.htm#wbgt**

WBGT PRACTICE GUIDELINES

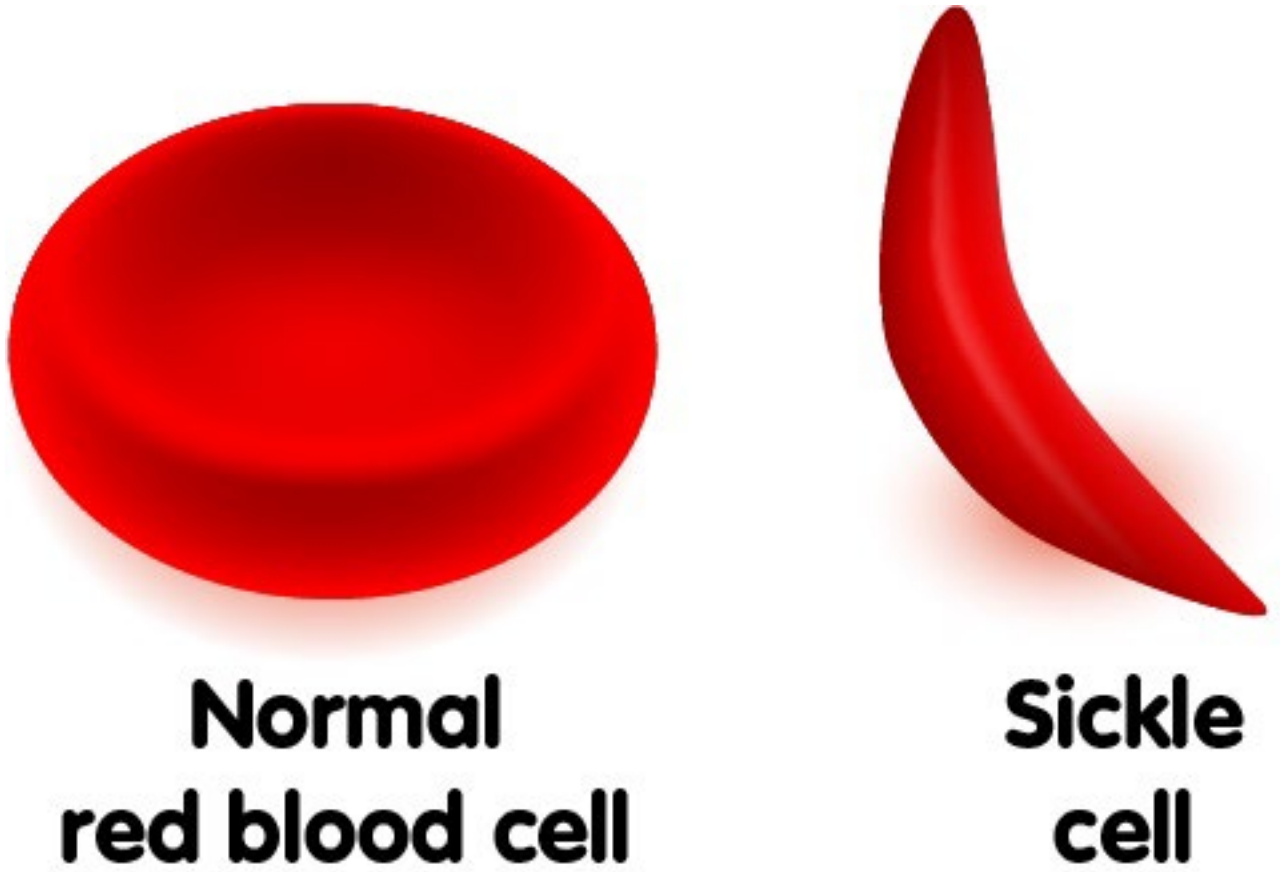
WBGT	ACTIVITY/REST BREAK GUIDELINES
Under 82.0	Normal Activities – Provide at least three separate rest breaks each hour with a minimum duration of 3 minutes each during the workout & equal at least 10 min/hour.
82.0 - 86.9	Use discretion for intense and prolonged exercise; watch at-risk players carefully. Provide at least three separate rest breaks each hour with a minimum duration of 4 minutes each.
87.0 – 89.9	Maximum practice time is 2 hours. **For Football**: players are restricted to helmet, shoulder pads, and shorts during practice, and all protective equipment must be removed during conditioning activities. If the WBGT rises to this level during practice, players must continue to work out wearing football pants without changing to shorts. **For All Sports**: Provide at least four separate rest breaks each hour with a minimum duration of 4 minutes each & equal at least 20 min/hour.
90.0 – 92.0	Maximum practice time is 1 hour. **For Football**: no protective equipment may be worn during practice, and there may be no conditioning activities. **For All Sports**: There must be 30 minutes of rest breaks distributed throughout the hour of practice.
Over 92.1	No outdoor workouts. Delay practice until cooler WBGT level is reached.

EXERTIONAL HEAT ILLNESS

- Occurs when an otherwise healthy individual is exercising in the heat.
- Three stages
  - Heat cramps
  - Heat exhaustion
  - Exertional heat stroke
    - Body temperature over 104°
    - Cannot reverse itself without intervention.
- Rapid cold water immersion
  - Cool first, transport second
  - Goal = core body temperature under 102° in under 30 minutes.
  - Best practice standard is use of a rectal thermometer
  - Have large towel available to hold athlete up
  - Remove as much clothing as possible and circulate water with paddle or hands
  - Scenarios are reviewed with EMS and/or Fire Departments as well as coaching staff pre-season.
  - 100% survivable if protocol is followed

SICKLE CELL TRAIT

- Sickle cell trait (SCT) is a genetic variation and usually benign.
- About 1 in 12 African Americans and about 1 in 2,000 to 1 in 10,000 Caucasians have SCT.
- While not the same as sickle cell anemia, SCT can cause exertional sickling also termed "explosive rhabdomyolysis", during intense exercise.
- Exertional sickling occurs when the sickled red blood cells "log-jam" in the blood vessels, which can cause fatal ischemic/exertional rhabdomyolysis.
- KNOW WHO AMONG YOUR ATHLETES HAS IT!



SICKLE CELL TRAIT

- Signs and Symptoms
- Usually occurs in the first few minutes of high intensity exercise.
- Reports of increasing pain and weakness in the muscles, especially in the lower extremity. This might be perceived as "cramping" but is much more diffuse than heat cramps. Heat cramps normally cause the athlete immediate acute pain that immobilizes them while exertional sickling is more of a strong, diffuse ischemic pain.
- Legs become weak and unstable, athletes normally collapse and most often are mistaken for a case of heat stroke, heat exhaustion or heat cramps.

- Predisposing factors
- Heat
- Dehydration
- Altitude
- Asthma
- High intensity exercise with few rest intervals.
-
- Treatment
- Give supplemental oxygen if possible.
- Cool the athlete, if needed.
- Call 911 and explain the urgent care needed for an athlete in a sickle-cell event.

SICKLE CELL TRAIT

- Return-to-Play
- Blood samples must return to normal (specifically creatine kinase and liver/renal markers).
- In mild and well-managed cases athletes may be able to return to play the next day.
- In severe cases, extended stay in a hospital may be warranted and return to play may take weeks, if at all.
- DO NOT force athlete to return to play until cleared by a physician.

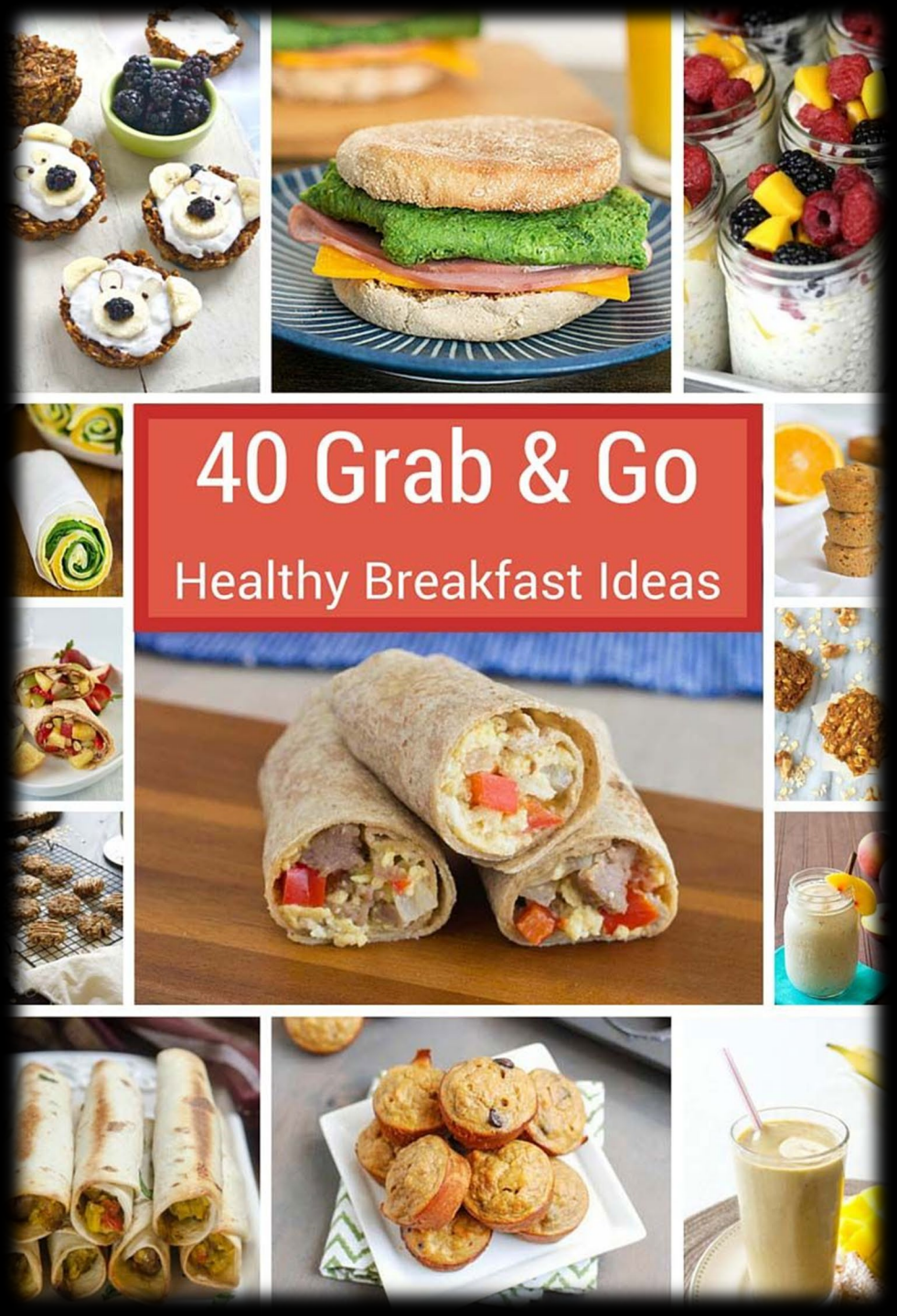
- Prevention
- Sickle cell trait is genetic. Athletes with a family history of sickling should be tested.
- Those with known SCT or a high probability of SCT should be treated as follows:
  - Allow a greater time for build-up in training.
  - Provide breaks as needed or longer "breathers" between intervals and allow SCT athletes to set their own pace.
  - No all-out exertion lasting longer than 2 minutes.
  - Have supplemental oxygen ready if at high altitudes. (i.e., if playing in NWA, inform EMS on-site of athlete who has SCT.)
  - Be aware of the signs and symptoms and tell the athlete to report them immediately if they begin to experience these.

DOS AND DON'TS IN THE HEAT

- DO
  - Hydrate throughout the day
  - Eat a healthy breakfast and lunch
    - If your lunch is early or late in the day, bring snacks
      - PB sandwich, PB crackers, almonds, string cheese, crackers, apples
  - Wear lightweight, light-colored clothing
  - Get the proper amount of rest
  - Check your urine color
    - Lemonade or lighter = good to go
    - Darker = you need to hydrate!
- Know your sweat rate!
  - Weight charts
    - Weigh in before practice and weigh out after practice DAILY
    - Must be back within 3% of your original weight at the BEGINNING of the week…not the day before!
    - If weight loss is a goal, it is preferable to do this in the off-season or once the weather has cooled.
    - See your athletic trainer to monitor fluid loss vs weight loss.

DO AND DON'TS

- DON'T
  - Skip meals
    - Prep the night before or have something you can grab quickly
  - Wear leggings
    - Recent studies have show leggings do absolutely nothing to increase muscle energy.
    - They retain heat!
    - BHS policy:
      - Leggings will be cut off if you start cramping or have to be placed in the cold tub…don't waste your $!!



DOS AND DON'TS

- DON'T
  - Take supplements or energy drink such as creatine, C4, NO Xplode, Monster, Red Bull, etc.
    - Caffeine-based
    - Takes water out of your system and increases thermogenesis.
    - Increases your heart rate to dangerously high, even fatal, levels
    - Not FDA approved
    - Over 84% of supplements have been found to contain anabolic steroids or other banned sustances hidden under various names.
      - ILLEGAL in pro sports, NCAA, NAIA
      - Can show up positive on drug screen
    - Coaches and ATs should ***NEVER*** dispense supplements, even protein drinks!!
    - It is AGAINST POLICY at Bryant to use any performance enhancing supplements on campus!
      - If they are seen, they will be taken, dumped, and thrown away!! Don't waste your money!

SPEAK UP!!

- Athletes should never fear letting down coaches or teammates due to a heat illness. NOR should teammates fear speaking up for each other if they see others not doing well.
  - Coaches and ATs will set the culture for this.
  - Athletes will NEVER be punished for heat illness.
    - Athletes should remain out of activity for a minimum of 24 hours or at the doctor's discretion if transported to the hospital following a heat illness event. This is part of the recovery process just as with other injuries.
    - Use common sense!
    - Coaches and ATs will pull any athlete exhibiting signs and symptoms.
    - ATs will have the final say as to return to play.

CONCUSSIONS: WHAT YOU NEED TO KNOW

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E60: SECOND IMPACT

SIGNS AND SYMPTOMS: WHAT YOU ALREADY KNOW

THINKING/MEMORY

- Difficulty thinking clearly
- Slower memory/recall
- Difficulty concentrating
- Difficulty remembering new information

PHYSICAL

- Headache
- Blurry, fuzzy, or double vision
- Nausea or vomiting
- Dizziness
- Light or noise sensitivity
- Balance issues
- Tired or no energy
- Pupils may be unequal, dilated

SIGNS AND SYMPTOMS: WHAT YOU ALREADY KNOW

EMOTIONAL

- Irritable
- Irrational
- Sadness
- Nervousness
- Anxiety

SLEEP

- Sleeping more than usual
- Sleeping less than usual
- Difficulty falling asleep

BUT DID YOU KNOW…

- 95% of concussions do not involve loss of consciousness.
- You don't have to be hit in the head to sustain a concussion.
- Sub-concussive hits can become cumulative.
- Concussions may occur with as little as 18% torque (head rotation).
- Not EVERY hit to the head automatically means concussion.
    - Let a medical professional determine this (Athletic Trainer or Physician)!

BUT DID YOU KNOW…

- Posturing
  - Fencing Response
    - Posturing of arms immediately following impact
    - One arm flexed, one extended as in the fencing "en garde" position.
  - Decorticate
    - Legs straight, bent arms, clenched fists
    - Damage to nerve pathway between brain and brainstem
  - Decerebrate
    - Arms & legs straight, toes pointed down, head & neck arched backward
    - SEVERE brain injury

BUT DID YOU KNOW…

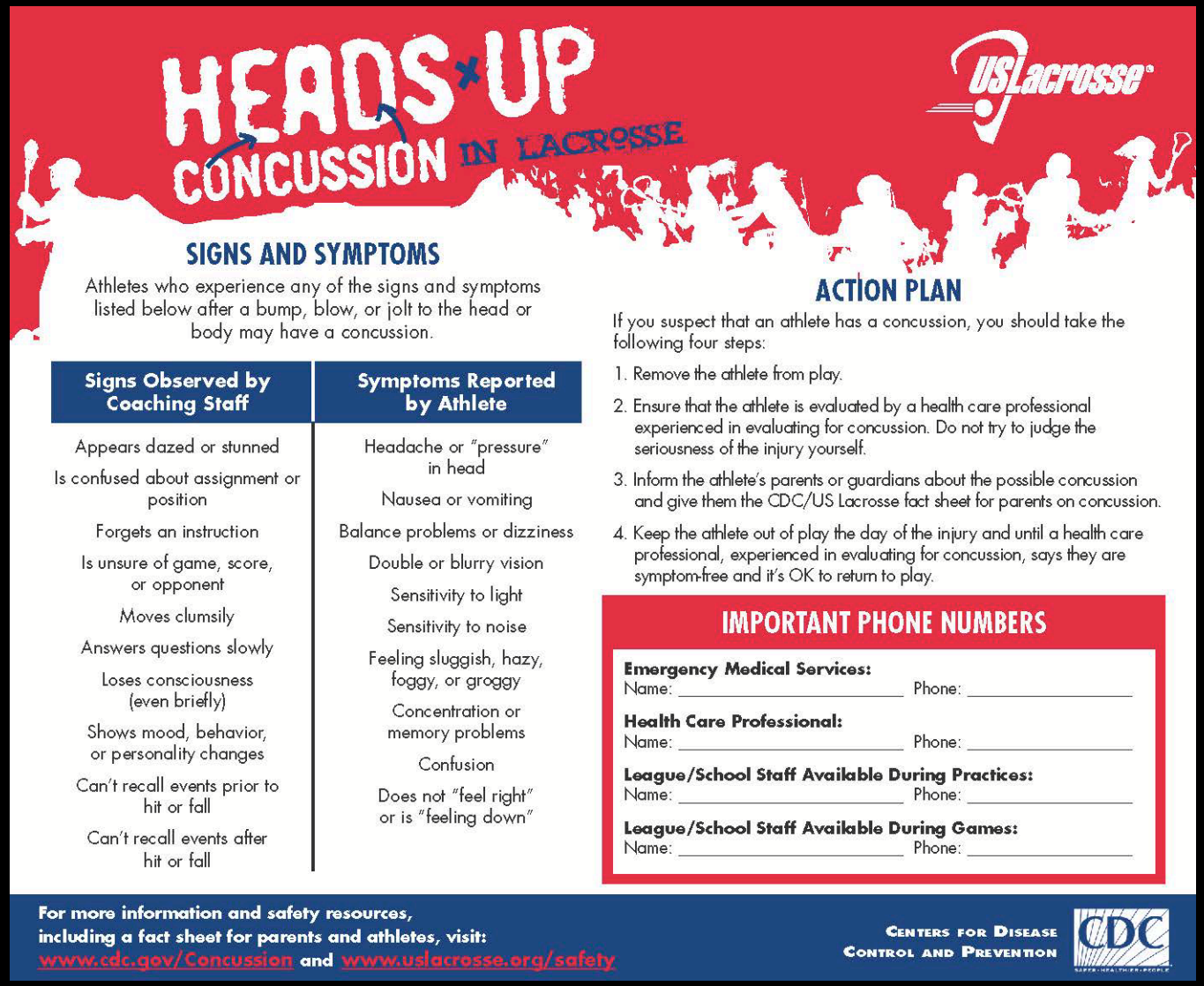
- A negative CT scan does NOT mean an athlete is negative for concussion. It simply means there is no structural damage (brain bleed, hematoma).
  - Signs and symptoms
  - Clinical exam
  - ImPact, King-Devick, SCAT 5, SWAY Balance…empirical tests
  - Being "cleared" by a physician does ***NOT*** mean the athlete is exempt from completing the Return to Play (RTP) Protocol!!!
  - Athletes MUST, ***BY LAW***, complete the 5-step RTP and be cleared by a medical professional (AT, MD, DO, APN, or PA)!!!
  - NO EXCEPTIONS or early return!

CONCUSSION MANAGEMENT

- If a concussion is suspected, Bryant athletic staff will:
  - Assess level of consciousness.
  - Check signs and symptoms.
  - Call parents to pick up…do not let the athlete drive!!
  - Have someone stay with the athlete until a parent arrives.
  - Refer to athletic trainer or physician.
- If your athlete is knocked out, posturing, or symptoms worsen:
  - Call 911.
  - Keep the athlete calm and clear the area of bystanders.
  - Stabilize c-spine.
  - Monitor ABCs.

CONCUSSION MANAGEMENT

- IS IT PART OF YOUR EMERGENCY ACTION PLAN? *At Bryant…YES*
- DO YOU REVIEW IT WITH YOUR PARENTS DURING YOUR PARENT MEETINGS? *At Bryant…YES*
- DO THEY UNDERSTAND THE RTP PROTOCOL? *At Bryant…YES*
- DO YOU HAVE AN ATHLETIC TRAINER AT YOUR SCHOOL? *At Bryant…4!*
- IF NOT, WHO IS RESPONSIBLE FOR TRACKING AND MONITORING THE RTP PROTOCOL FOR YOUR SPORT?



RETURN TO PLAY PROTOCOL

- Return to Learn MUST come first if concussion occurs while school is in session!!
  - Athlete may need to complete half days, then full days of school.
  - May need extra time for homework and other assignments.
  - May need to limit computer time or noisy areas.
  - May need to postpone quizzes or tests.
  - Extended recovery may need temporary 504.
- Remember this is a 5-STEP…not necessarily a 5-DAY…RTP protocol.
  - No "cookie cutter" approach. Every athlete is different and may heal faster or slower than another athlete.
  - Bank on your athlete missing 1-2 games (depending on sport).
  - Do NOT pressure the athlete to return early or punish them for being out!!
- Bryant Athletes must have a Return to Play Release form signed and turned in AFTER the RTP is complete and BEFORE being allowed to participate. This form can be found on Rank One under the Download and Print tab.

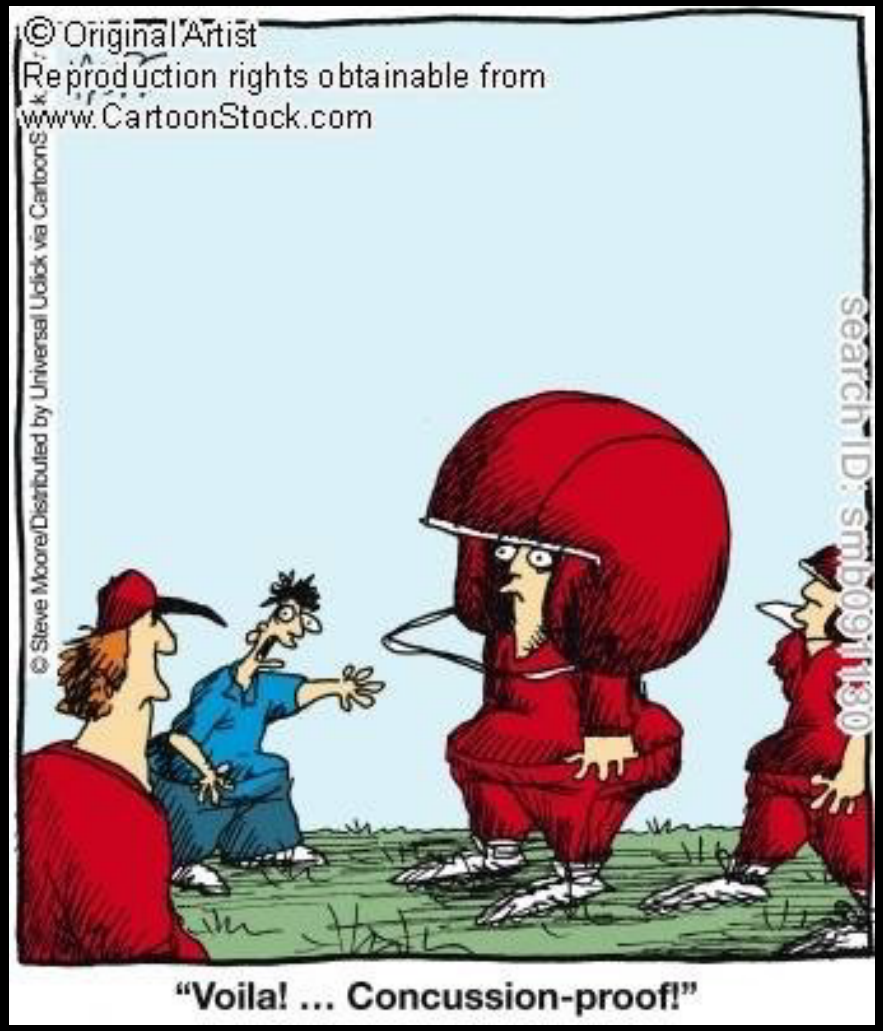
GRTP GUIDELINES BEGINNING IN 2020

- Student athlete (SA) must exhibit a resolution of concussion symptoms back to or near pre-injury baseline levels for a minimum of 24 HOURS prior to the SA being cleared by their QHP to initiate and proceed through the GRTP.
- If school is in session, the SA that has been diagnosed with a concussion MUST attend a FULL DAY of school (within the normal school year) without symptoms or classroom modifications prior to that athlete beginning the GRTP. SAs that are only attending a partial day or currently have classroom modifications in place due to their concussion are not eligible to begin the GRTP.
- If school is NOT in session (Summer/Fall/Winter/Spring Breaks, AMI, or a regularly scheduled non-school day), the GRTP may be administered by the direction of the QHP overseeing the SA's healthcare.
- There should be at least 24 hours between each step of the GRTP.
- If symptoms significantly increase during these activities, stop the workout immediately.

GRTP GUIDELINES BEGINNING IN 2020

- The SA should then rest until symptoms return back to or near pre-injury baseline levels for 24 hours then return to the previously completed stage of the GRTP.
- If symptoms persist or worsen, seek medical attention by returning the SA back to the QHP that is overseeing their healthcare.
- Once the SA has successfully completed the 5-stage GRTP, they are eligible to return to participation on Day 6. **They are NOT eligible to return on Day 5!!**
- In the absence of a Certified Athletic Trainer, a designated school employee may administer the GRTP under the AAA guidelines set forth by this document and following the direction of the QHP in charge of the SA's healthcare.
- The GRTP paperwork must be fully completed, signed, and dated by the individual who completes the step-wise protocol.
- THE ARKANSAS ACTIVITIES ASSOCIATION SPORTS MEDICINE ADVISORY COMMITTEE THEN RECOMMENDS THAT THE SCHOOL KEEPS THE MEDICAL RELEASE FORMS FOR A MINIMUM OF 3 YEARS FOR DOCUMENTATION.

ABOUT THOSE HELMETS…



- New helmets are being produced all the time to "reduce" the incidence of concussion.
- Up until now, the only safety standards have been vertical drop test. (KSI article)
  - Only measures linear forces.
  - Because the head is round and most hits are off-center, almost every collision involves rotational forces.
  - Starting in 2018, NOCSAE will include rotational threshold.
  - Football Research, Inc. (NFL non-profit), along with Duke University, now involved in development and testing with goals of better overall helmet in 3 years and position-specific helmets in 5 years.
- May affect dispersal of impact, but nothing will keep the brain from moving inside the skull if the force is hard enough.
- Be aware that any alteration of the helmet (i.e. visor) voids the NOCSAE warranty.
- False sense of security
  - Athletes feel invincible
  - Leads to unsafe technique

WHERE DO WE GO FROM HERE?

- Research is evolving almost daily.

- Additional Resources
  - CDC
  - Heads Up
  - Big Hits, Broken Dreams (CNN – Dr. Gupta)
  - Bell Ringer: The Invisible Brain Injury (AETN)

THANK YOU!