# The Athletic Trainers On-Field Assessment & Management of Concussion

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# Disclosure

I have no financial or commercial relationships to disclose

# What is an Athletic Trainer (AT)?

- Certified Athletic Trainers are licensed healthcare providers who specialize in prevention, assessment, emergency care, treatment, and rehabilitation of injuries & illnesses that occur to athletes and the physically active

- Athletic Trainers work under the direction of a licensed physician (like Nurses & Therapists)and collaborate with other healthcare providers, administrators, coaches & parents

# What is an Athletic Trainer (AT)?

- Athletic Trainers provide a critical link between school based sports programs and the local medical community
- Athletic Trainers are a valuable resource to educate and counsel student-athletes in the prevention of chronic disease & degenerative injuries
- The American Medical Association (AMA) and The American Academy of Pediatrics (AAP) recommend Athletic Trainers in the Secondary School sports setting

# Why An Athletic Trainer?

- Athletic Trainers have the education and experience with head/neck injuries that many other first responders don't have
- The AT often sees an athlete on a daily basis, building trusting relationships which leads to greater reporting of symptoms
- The Athletic Trainer may be better suited than most healthcare providers at identifying subtle signs of concussion due to more frequent interactions

# Why An Athletic Trainer?

- The AT is in the best position to perform daily follow up examinations which helps determine when an athlete can safely return to play
- AT's are the "glue" in the sports medicine team
- Athletic Trainers specialize in patient education to prevent injury and re-injury, thus reducing healthcare cost to families and lost time in the classroom and the playing field

# What Would You Do?

- Would you drop your child off at a pool, lake or ocean that didn't have a lifeguard?

  If the answer is no then you shouldn't drop your child off at a practice or game without an athletic trainer


## The Numbers

- Sect. 1 Schools w/ access to FT Athletic Trainers: 65%
- NYS schools w/ access to FT Athletic Trainers: 27%
- US schools w/ access to FT Athletic Trainer's: 37%

  (Pryor, et al. 2015)

# On-Field Assessment

## Key Points

- Identification of the concussed athlete is the most difficult aspect of the assessment process
- Most athletes fail to report symptoms; Most will not show visible signs
- Only about 10% of cases result in a loss of consciousness
- Sideline assessment for concussion begins before the season in the form of baseline testing
- Regardless of tests used, evaluation should measure concussion related symptoms, postural control & neurocognitive function

# On-Field Assessment

## Primary Survey

- Determine level of consciousness (AVPU scale)
- Survey the athlete's Airway, Breathing, and Circulation while maintaining neutral position of the cervical spine
- If an athlete is rendered unconscious, should be treated as suspected cervical spine injury/stabilize on field and transport via EMS
- Once more severe injuries have been ruled out (e.g., cervical spine inj, skull fracture), athlete can be taken to sideline for further evaluation (Secondary Survey)

# On-Field Assessment

## Secondary Survey

- **History**:
  - In many cases, the concussive blow was witnessed and MOI known
  - Obtain information about mental confusion, loss of consciousness and amnesia
  - Test for retrograde amnesia by starting at time of impact and working backwards: "Do you remember getting hit?" "Do you remember the play?" "Who are we playing"
  - Test for anterograde amnesia w/ questions about events following impact: "Who do you recall seeing first on field?, "Do you recall coming over to bench?"
  - Follow up questions should identify presence/absence of concussion symptoms; Graded Symptom Checklist

# Graded Symptom Scale Checklist

*Modified from various published symptom checklists*[27-30]

Evaluate **all** signs and symptoms, ranking each on a scale of 0-6. **Establish baseline score prior to the start of the athletic season.** After a concussive injury, re-assess the athlete for each symptom. Add columns and compare to baseline score. Only consider return to activity if scores are comparable to baseline score. Continue testing every 2-3 days if symptoms do not resolve. Use with SAC and/or BESS to determine appropriate time for return to play.

| | None | | | Moderate | | | Severe |
|---|---|---|---|---|---|---|---|
| **Score According to Severity** | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

| Symptom | Preseason Baseline | Time of Injury | 24 Hours Post-Injury | Day 3 Post-Injury | Day 4 Post-Injury | Day 5 Post-Injury |
|---|---|---|---|---|---|---|
| Blurred Vision | | | | | | |
| Dizziness | | | | | | |
| Drowsiness | | | | | | |
| Sleeping More than Usual | | | | | | |
| Easily Distracted | | | | | | |
| Fatigue | | | | | | |
| Feeling "In a Fog" | | | | | | |
| Feeling "Slowed Down" | | | | | | |
| Headache | | | | | | |
| Unusually Emotional | | | | | | |
| Irritability | | | | | | |
| Loss of Consciousness | | | | | | |
| Loss of Orientation | | | | | | |
| Memory Problems | | | | | | |
| Nauseous | | | | | | |
| Nervousness | | | | | | |
| Personality Changes | | | | | | |
| Poor Balance/Coordination | | | | | | |
| Ringing in the Ears | | | | | | |
| Sadness | | | | | | |
| Seeing Stars | | | | | | |
| Sensitivity to Light | | | | | | |
| Sensitivity to Noise | | | | | | |
| Sleep Disturbances | | | | | | |
| Vacant Stares/Glassy Eyes | | | | | | |
| Vomiting | | | | | | |
| TOTAL SYMPTOM SCORE: | | | | | | |

# On-Field Assessment

## Secondary Survey

- **Observation/Palpation**:
  - Can be completed as you perform evaluation process
  - Be attentive to speech patterns, difficulty finding/saying the correct words, pupil size, reaction to light and fluidity of eye movement
  - Pulse and blood pressure should be taken to rule out more extensive injuries. If Pulse pressure (systolic – diastolic press.) remains high (>60 mmHG) and Pulse rate is low after 10 minutes, possible intracranial hemorrhage should be suspected and transported via EMS
  - Check for facial abnormalities (neurological) or fractures
  - Palpate athlete's cervical spine & skull to rule out fracture
  - A positive exam in any of these areas suggest more significant injury and warrants immediate transport via EMS

# On-Field Assessment

## Secondary Survey

- **Special Tests**:
  - Sideline concussion tests should evaluate neurocognitive status, postural control, and cranial nerve integrity
  - Sideline testing should use a combination of the following tests:
    - Standardized Assessment of Concussion (SAC)
    - Sport Concussion Assessment Tool 3 (SCAT3)
    - Balance Error Scoring System (BESS)
    - King-Devick Test
    - Cranial Nerve Testing
    - Manual Muscle Testing

# On-Field Assessment Special Tests

- **Standardized Assessment of Concussion (SAC)**
  - Quick & reliable mental status exam; takes about 5-6 minutes to complete
  - Does not require training in Neuropsych to administer or interpret
  - Consists of 4 sections that evaluate orientation, immediate memory, concentration, and delayed recall (memory)
  - Includes a brief neurological screening
  - Most accurate when compared to a preseason baseline SAC

# STANDARDIZED ASSESSMENT OF CONCUSSION (SAC)

## 1. ORIENTATION

Month: _____ 0 1
Date: _____ 0 1
Day of week: _____ 0 1
Year: _____ 0 1
Time (within 1 hr): _____ 0 1

Orientation total score _____ / 5

## 2. IMMEDIATE MEMORY

(All 3 trials are completed regardless of score on trial 1 and 2; total score equals sum across all 3 trials.)

| List | Trial 1 | Trial 2 | Trial 3 |
|---|---|---|---|
| Word 1 | 0 1 | 0 1 | 0 1 |
| Word 2 | 0 1 | 0 1 | 0 1 |
| Word 3 | 0 1 | 0 1 | 0 1 |
| Word 4 | 0 1 | 0 1 | 0 1 |
| Word 5 | 0 1 | 0 1 | 0 1 |
| Total | 0 1 | 0 1 | 0 1 |

Immediate memory total score _____ / 15

(Note: Subject is not informed of delayed recall testing of memory.)

## NEUROLOGICAL SCREENING:

Loss of consciousness: (occurrence, duration)

Pre- and posttraumatic amnesia: (recollection of events pre- and post-injury)

Strength:

Sensation:

Coordination:

## 3. CONCENTRATION

*Digits backward.* (If correct, go to next string length. If incorrect, read trial 2. Stop after incorrect on both trials.)

4-9-3 6-2-9 _____ 0 1
3-8-1-4 3-2-7-9 _____ 0 1
6-2-9-7-1 1-5-2-8-6 _____ 0 1
7-1-8-4-6-2 5-3-9-1-4-8 _____ 0 1

*Months in reverse order*: (entire sequence correct for 1 point)

Dec-Nov-Oct-Sept-Aug-July
June-May-Apr-Mar-Feb-Jan) _____ 0 1

Concentration total score _____ / 5

## EXERTIONAL MANEUVERS

(when appropriate)

5 jumping jacks 5 push-ups
5 sit-ups 5 knee-bends

## 4. DELAYED RECALL

Word 1 0 1
Word 2 0 1
Word 3 0 1
Word 4 0 1
Word 5 0 1

Delayed recall total score _____ / 5

## SUMMARY OF TOTAL SCORES:

Orientation _____ / 5
Immediate memory _____ / 15
Concentration _____ / 5
Delayed recall _____ / 5

Overall total score _____ / 30

# On-Field Assessment Special Tests

- **Sport Concussion Assessment Tool 3 (SCAT3)**
  - Standardized tool for evaluating concussions in athletes 13 yo & up; Child SCAT3 is available for athletes 12 yo and younger
  - Designed for use by medical professionals
  - Takes about 15-20 minutes; includes information page to be given to athlete/parent
  - Consists of 4 sections that evaluate symptoms, cognition(SAC), balance, and coordination
  - Most accurate when compared to a preseason baseline SCAT3

# SCAT3™

## Sport Concussion Assessment Tool – 3rd edition

For use by medical professionals only

Name: Date / Time of Injury: Examiner:
Date of Assessment:

## What is the SCAT3?[1]

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[2]. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[3]. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision or any reproduction in a digital form requires approval by the Concussion in Sport Group.

**NOTE:** The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgement. An athlete may have a concussion even if their SCAT3 is "normal".

## What is a concussion?

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific signs and / or symptoms (some examples listed below) and most often does not involve loss of consciousness. Concussion should be suspected in the presence of any one or more of the following:

- Symptoms (e.g., headache), or
- Physical signs (e.g., unsteadiness), or
- Impaired brain function (e.g. confusion) or
- Abnormal behaviour (e.g., change in personality).

## SIDELINE ASSESSMENT

### Indications for Emergency Management

**NOTE:** A hit to the head can sometimes be associated with a more serious brain injury. Any of the following warrants consideration of activating emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs

### Potential signs of concussion?

If any of the following signs are observed after a direct or indirect blow to the head, the athlete should stop participation, be evaluated by a medical professional and **should not be permitted to return to sport the same day** if a concussion is suspected.

| | | |
|---|---|---|
| Any loss of consciousness? | Y | N |
| "If so, how long?" | | |
| Balance or motor incoordination (stumbles, slow / laboured movements, etc.)? | Y | N |
| Disorientation or confusion (inability to respond appropriately to questions)? | Y | N |
| Loss of memory: | Y | N |
| "If so, how long?" | | |
| "Before or after the injury?" | | |
| Blank or vacant look: | Y | N |
| Visible facial injury in combination with any of the above: | Y | N |

## 1 Glasgow Coma Scale (GCS)

| | |
|---|---|
| **Best eye response (E)** | |
| No eye opening | 1 |
| Eye opening in response to pain | 2 |
| Eye opening to speech | 3 |
| Eyes opening spontaneously | 4 |
| **Best verbal response (V)** | |
| No verbal response | 1 |
| Incomprehensible sounds | 2 |
| Inappropriate words | 3 |
| Confused | 4 |
| Oriented | 5 |
| **Best motor response (M)** | |
| No motor response | 1 |
| Extension to pain | 2 |
| Abnormal flexion to pain | 3 |
| Flexion / Withdrawal to pain | 4 |
| Localizes to pain | 5 |
| Obeys commands | 6 |
| **Glasgow Coma score (E + V + M)** | of 15 |

GCS should be recorded for all athletes in case of subsequent deterioration.

## 2 Maddocks Score[3]

*"I am going to ask you a few questions, please listen carefully and give your best effort."*

Modified Maddocks questions (1 point for each correct answer)

| | | |
|---|---|---|
| What venue are we at today? | 0 | 1 |
| Which half is it now? | 0 | 1 |
| Who scored last in this match? | 0 | 1 |
| What team did you play last week / game? | 0 | 1 |
| Did your team win the last game? | 0 | 1 |
| **Maddocks Score** | | of 5 |

Maddocks score is validated for sideline diagnosis of concussion only and is not used for serial testing.

**Notes:** Mechanism of injury (**"Tell me what happened"?**):

**Any athlete with a suspected concussion should be REMOVED FROM PLAY, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle until cleared to do so by a medical professional. No athlete diagnosed with concussion should be returned to sports participation on the day of injury.**

## BACKGROUND

Name: _____ Date: _____

Examiner: _____

Sport / team / school: _____ Date / time of injury: _____

Age: _____ Gender: ☐ M ☐ F

Years of education completed: _____

Dominant hand: ☐ right ☐ left ☐ neither

How many concussions do you think you have had in the past? _____

When was the most recent concussion? _____

How long was your recovery from the most recent concussion? _____

Have you ever been hospitalized or had medical imaging done for a head injury? ☐ Y ☐ N

Have you ever been diagnosed with headaches or migraines? ☐ Y ☐ N

Do you have a learning disability, dyslexia, ADD / ADHD? ☐ Y ☐ N

Have you ever been diagnosed with depression, anxiety or other psychiatric disorder? ☐ Y ☐ N

Has anyone in your family ever been diagnosed with any of these problems? ☐ Y ☐ N

Are you on any medications? If yes, please list: ☐ Y ☐ N

_____

**SCAT3 to be done in resting state. Best done 10 or more minutes post exercise.**

## 3 How do you feel?

*"You should score yourself on the following symptoms, based on how you feel now".*

| | none | mild | | moderate | | | severe |
|---|---|---|---|---|---|---|---|
| Headache | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| "Pressure in head" | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Neck pain | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Nausea or vomiting | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Dizziness | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Blurred vision | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Balance problems | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Sensitivity to light | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Sensitivity to noise | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Feeling slowed down | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Feeling like "in a fog" | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| "Don't feel right" | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Difficulty concentrating | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Difficulty remembering | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Fatigue or low energy | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Confusion | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Drowsiness | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Trouble falling asleep | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| More emotional | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Irritability | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Sadness | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Nervous or anxious | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

**Total number of symptoms (Maximum possible 22)** _____

**Symptom severity score (Maximum possible 132)** _____

Do the symptoms get worse with physical activity? ☐ Y ☐ N

Do the symptoms get worse with mental activity? ☐ Y ☐ N

☐ self rated ☐ self rated and clinician monitored

☐ clinician interview ☐ self rated with parent input

**Overall rating:** If you know the athlete well prior to the injury, how different is the athlete acting compared to his / her usual self? Please circle one response:

| no different | very different | unsure | N/A |
|---|---|---|---|

Scoring on the SCAT3 should not be used as a stand-alone method to diagnose concussion, measure recovery or make decisions about an athlete's readiness to return to competition after concussion. Since signs and symptoms may evolve over time, it is important to consider repeat evaluation in the acute assessment of concussion.

## 4 Cognitive assessment

**Standardized Assessment of Concussion (SAC)[4]**

**Orientation** (1 point for each correct answer)

| | | |
|---|---|---|
| What month is it? | 0 | 1 |
| What is the date today? | 0 | 1 |
| What is the day of the week? | 0 | 1 |
| What year is it? | 0 | 1 |
| What time is it right now? (within 1 hour) | 0 | 1 |

**Orientation score** _____ of 5

**Immediate memory**

| List | Trial 1 | | Trial 2 | | Trial 3 | | Alternative word list | | |
|---|---|---|---|---|---|---|---|---|---|
| elbow | 0 | 1 | 0 | 1 | 0 | 1 | candle | baby | finger |
| apple | 0 | 1 | 0 | 1 | 0 | 1 | paper | monkey | penny |
| carpet | 0 | 1 | 0 | 1 | 0 | 1 | sugar | perfume | blanket |
| saddle | 0 | 1 | 0 | 1 | 0 | 1 | sandwich | sunset | lemon |
| bubble | 0 | 1 | 0 | 1 | 0 | 1 | wagon | iron | insect |
| Total | | | | | | | | | |

**Immediate memory score total** _____ of 15

**Concentration: Digits Backward**

| List | Trial 1 | | Alternative digit list | | |
|---|---|---|---|---|---|
| 4-9-3 | 0 | 1 | 6-2-9 | 5-2-6 | 4-1-5 |
| 3-8-1-4 | 0 | 1 | 3-2-7-9 | 1-7-9-5 | 4-9-6-8 |
| 6-2-9-7-1 | 0 | 1 | 1-5-2-8-6 | 3-8-5-2-7 | 6-1-8-4-3 |
| 7-1-8-4-6-2 | 0 | 1 | 5-3-9-1-4-8 | 8-3-1-9-6-4 | 7-2-4-8-5-6 |
| Total | | | | | |

**Concentration: Month in Reverse Order** (1 pt. for entire sequence correct)

Dec-Nov-Oct-Sept-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan 0 1

**Concentration score** _____ of 5

## 5 Neck examination

Range of motion Tenderness Upper and lower limb sensation & strength

**Findings:** _____

## 6 Balance examination

Do one or both of the following tests.

Footwear (shoes, barefoot, braces, tape, etc.) _____

**Modified Balance Error Scoring System (BESS) testing[4]**

Which foot was tested (i.e. which is the non-dominant foot) ☐ L ☐ R

Testing surface (hard floor, field, etc.) _____

**Condition** | **Errors**

Double leg stance: _____

Single leg stance (non-dominant foot): _____

Tandem stance (non-dominant foot at back): _____

**And / Or**

**Tandem gait[4,7]**

Time (best of 4 trials): _____

## 7 Coordination examination

**Upper limb coordination**

Which arm was tested: ☐ L ☐ R

**Coordination score** _____ of 1

## 8 SAC Delayed Recall[4]

**Delayed recall score** _____ of 5

# On-Field Assessment

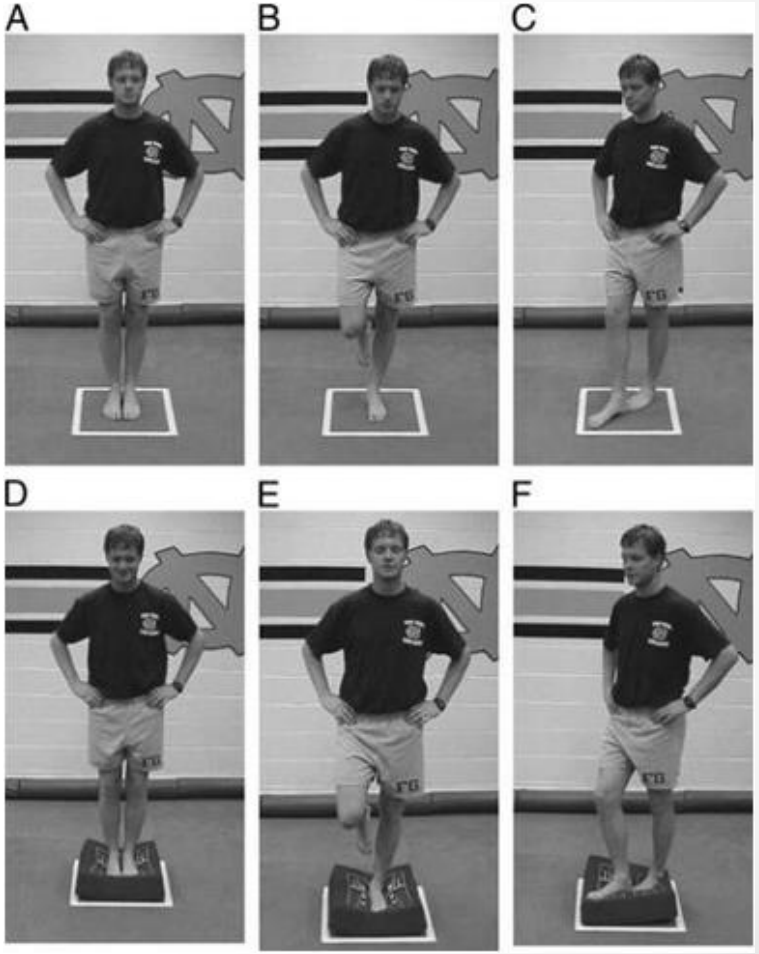
## Special Tests

- **Balance Error Scoring System (BESS)**
  - Quick & reliable balance test; takes about 5-7 minutes to complete
  - Developed as an objective postural control measure that can be used on the sideline
  - Should be administered 10-15 minutes after athletic activity/injury, w/o ankle brace/tape, and in quieter setting
  - Most accurate when compared to a preseason baseline BESS; 3 or more errors vs baseline is significant

# On-Field Assessment

## Special Tests

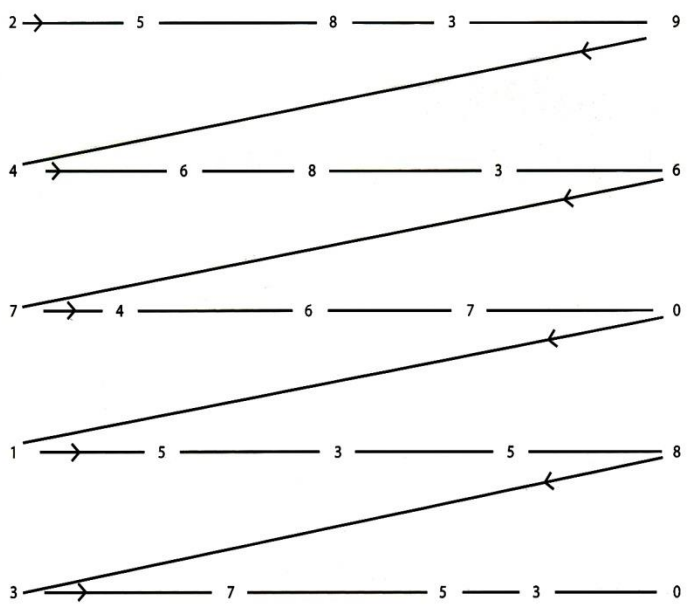
- 3 tests lasting 20s each
  - Double Leg
  - Single Leg
  - Tandem stance
- Eyes closed
- Perform on ground & once on foam surface
- Count "errors" or out of position moments:
  - Lifting hands off hips
  - opening eyes
  - step, stumble, or fall
  - >30 degrees of hip abduction or flexion
  - lifting foot or heel



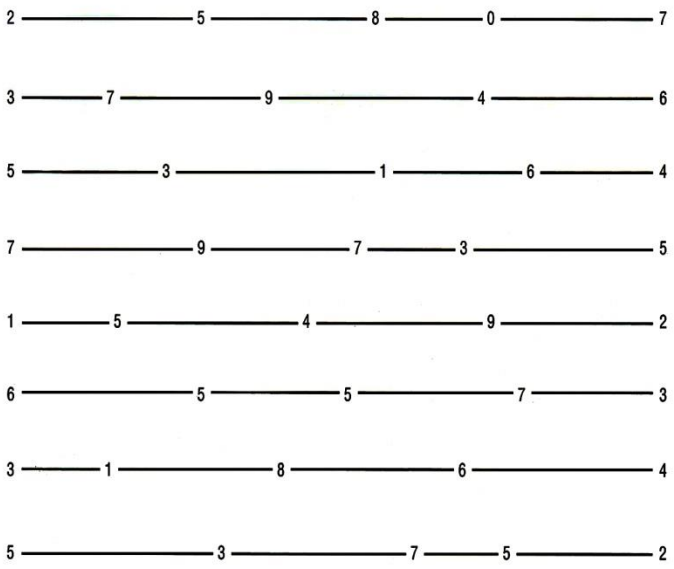
# On-Field Assessment

## Special Tests

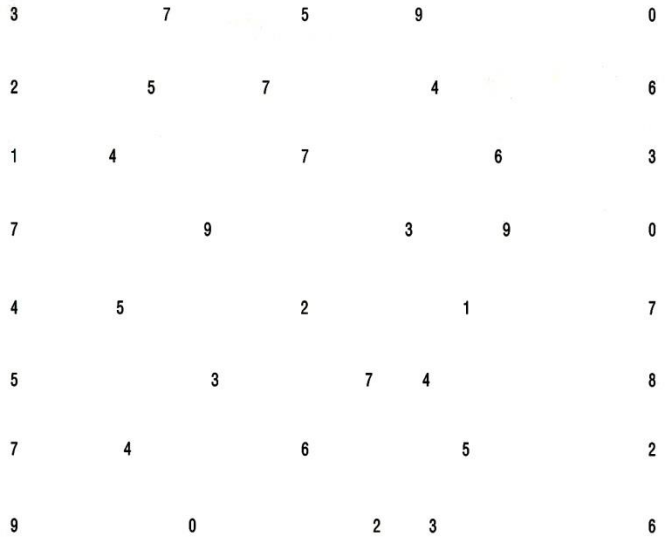
- **King-Devick Test (K-D Test)**
  - Accurate & reliable; takes about 2 minutes to complete
  - Requires an athlete to read single digit numbers on flash cards/iPad- can be administered by AT, coach, or even parents
  - Screens for impairments of eye movements, attention, language, and other brain functions
  - Most accurate when compared to a preseason baseline K-D Test



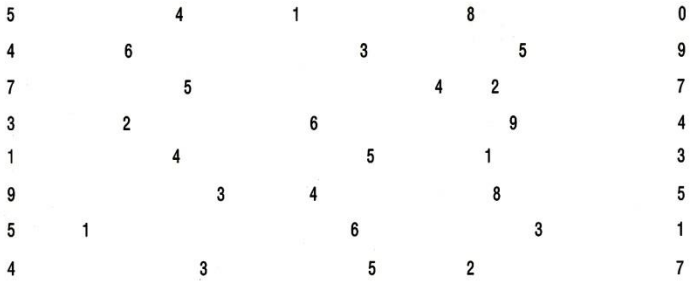

DEMONSTRATION CARD




TEST I




TEST II




TEST III

# On-Field Assessment

## Special Tests

- **Cranial Nerve Testing**
  - Quick & reliable test; takes about 2 minutes to complete
  - Cranial nerves are nerves which branch off the brain stem and primarily control functions within the head
  - Any changes in cranial nerve function may signal a more severe injury; transport via EMS
  - Some level of training is need to interpret/recognize abnormalities

| CN Number | Nerve | Test |
|---|---|---|
| 1 | Olfactory | Usually not tested |
| 2 | Optic | Test visual acuity: “Read scoreboard” |
| 3,4,6 | Oculomotor, Trochlear, Abducens | Follow finger in H pattern; PEARL |
| 5 | Trigeminal | Facial sensation- touch forehead/cheek/jaw; clench teeth |
| 7 | Facial | Inspect facial droop/asymetry; raise eyebrows; close eyes tightly; grin/frown/puff cheeks |
| 8 | Vestibulocochlear | Test hearing- Finger rub; BESS |
| 9,10 | Glossopharyngeal, Vagus | Hoarse voice; Swallow/cough/uvula disp |
| 11 | Accessory | Shrug shoulders; turn head against resistance |
| 12 | Hypoglossal | Stick out tongue |

# On-Field Assessment

## Special Tests

- **Manual Muscle Testing:**
  - If reported symptoms, BESS & SAC tests all come back normal, testing of neck ROM should follow
  - Flexion, Extension, Rotation in both directions should be done both passively & actively; Manual muscle testing in same directions should be performed as well
  - If limitations are present, athlete should be withheld
  - Limitations may place athletes at risk by restricting ability to scan field for opponent or brace for impact

# On-Field Assessment Re-evaluation

- Athlete is re-evaluated every 5-10 minutes and should not be left alone after initial few hours to monitor deterioration
- If condition deteriorates upon re-evaluation, or at home, athlete should be referred for emergency care
- Any positive signs/symptoms of concussion, athlete is removed from play
- No athlete is to return to play (RTP) on same day of injury, regardless if signs/symptoms improve

# Athletic Training Room Follow Up

- Following injury, the athlete should be referred to a medical provider trained in the care of head injuries (e.g. Neurologist, Neuropsychologist)
- Re-evaluation of signs and symptoms (using Graded Symptom Checklist) by Athletic Trainer w/in 24-72 hours post-injury
- Athletic Trainer communicates with principal, school nurse, classroom teachers, and guidance counselors for RTL
- Post-injury Neurocognitive testing (ImPACT) within 24-72 hours*

# Athletic Training Room Follow Up

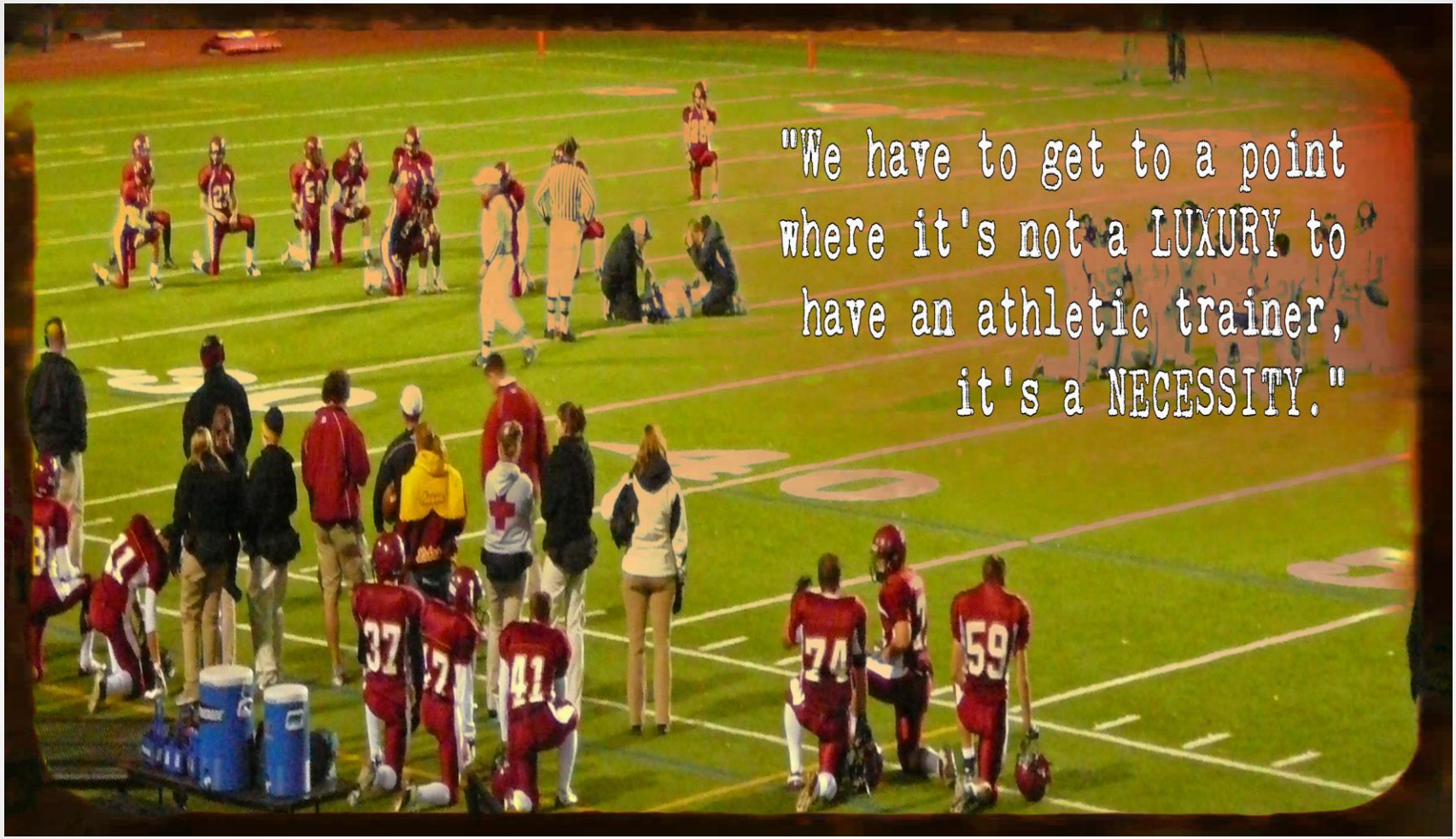
- The Athletic Trainer should communicate with a Neuropsychologist for proper test interpretation
- Best practice is a team approach of medical professionals including, but not limited to: Athletic Trainer, School Nurse, Pediatrician, Neuropsychologist, Neurologist, Neuro-Opthamologist, Vestibular Therapist
- Student-Athlete rests until asymptomatic, NO physical activity. Once medically cleared, progress to 6 stage RTP

*Graded Return to Play Protocol*

| Rehabilitation Stage | Functional exercise at each stage of rehabilitation | Objective of each stage |
|---|---|---|
| 1. No activity | Complete physical and cognitive rest | Recovery |
| 2. Light aerobic exercise | Walking, swimming, stationary bike with HR<70% maximum | Increased heart rate |
| 3. Sport specific exercise | Running drills without contact | Add movement |
| 4. Non-contact training | More complex drills without contact | Exercise, coordination and cognitive load |
| 5. Full contact | Normal training | Restore confidence |
| 6. Return to play | Game play | |

# Equipment Considerations

- NO piece of equipment or helmet is concussion proof – don't be mislead by false advertising
- Properly fitted and maintained protective equipment should be worn at all times. Equipment should be inspected regularly for broken or missing pieces/hardware
- Helmet reconditioning should include: Cleaned/Sanitized, No bear metal showing, All proper & new hardware, Inspect helmet shell for cracks, Air test bladders.
- Only 2-4% of reconditioned helmets are NOCSAE drop tested
- Helmets should be replaced 10 years from date of manufacture


"We have to get to a point
where it's not a LUXURY to
have an athletic trainer,
it's a NECESSITY."

# Thank You

## #AT4ALL