

Health & Safety Meeting

December 12, 2017 5:30p

Agenda

- **Business**
 - EmpowerHouse presentation
 - Concussion Team Subcommittee
- **Discussion**
 - Informational Items & Round Table Discussion
 - Report of local health concerns from committee members
 - Report on PD 16 activities (including Opioid letter)

Next meeting March 15, 2018 at 5:30p

THANKS for your service on this committee. Have a healthy & safe holiday!

Health & Safety Meeting Minutes

December 12, 2017 5:30p

Attendees

Belinda Cameron, Lisa Tate, Kristi Brouillette, Kim Clift, Ryan Osborne, Dr. Donna Gamache, Jackie Kunstmann, Alex Fisher, Mary Fisher, Nate Medic, Matthew Stemmler, Venida Rice. Kristin Tolliver

Scribe

Belinda Cameron

Agenda

- **Business**
 - Empower House Presentation
 - Concussion Policy Review
- **Informational Items & Round Table Discussion**
 - Report of local health concerns from committee members
 - Report on PD 16 activities

Business

- **Empower House Presentation:** An informative presentation was given on the services that Empower House provides. Terri Center is now located in King George Sheriff's office so King George residences can access her there. Empower House has worked with KGMS & KGHS Physical Education departments the last 2 years to assist in presenting lessons that correlate with the Family Life SOLs. Nate Medic verified that their information was very helpful to the students. It worked especially well when they were able to have the students in smaller groups to promote discussion. The committee discussed ways to potential expand this to the elementary levels.
- **Concussion Policy Discussion:** Alex Fisher, KGHS Athletic Director lead the review of the current KGCS Concussion policy. Matthew Stemmler, KGHS Athletic Trainer presented tools that are currently used to evaluate student athletes that sustain head injuries during events. Nurses from KGMS and KGHS stated that they have already seen several students being treated for concussions this school year and educational staff always had questions on "Return to Learn". The committee discussed at length both the "Return to Play" and the "Return to Learn" sections. All felt that more information for parents and students should be available, possibly including a section in the KGCS Handbook. The committee also felt that educational staff should have yearly training on "Return to Learn". Mary Fisher, Belinda Cameron and Alex Fisher will research these and bring back information to the committee in March.

Information Items & Round table Discussion

- Lisa Tate reported from PD 16 that Dr. Peter Smith is still moving forward with the Narcan standing orders that will be available to all PD 16 school division. The Narcan manufacturer has a program to provide high schools with free doses at this time. Currently no VSBA policy is in place regarding the use of "stock" Narcan. The committee will continue to monitor the situation.

Next Meeting

March 15, 2018 @ 5:30p

Adjournment

Meeting adjourned at 7:00p

King George County Schools

Concussion Management and Education

I. Concussion Guidelines

King George County Schools is committed to providing information regarding the issues surrounding brain injuries and how they can affect the student's abilities in the educational setting. KGCS is further committed to ensuring that students participating in school-sponsored activities (participating students) who sustain concussions are properly diagnosed, given adequate time to heal, and are comprehensively supported until they are symptom free. KGCS will provide training and education resources for staff at all grade levels.

These concussion guidelines are developed to meet the Code of Virginia, §22.1-271-5 and §22.1-271.6 providing the policies and guidelines dealing with concussions and requiring each school division to develop policies and procedures regarding the identification and handling of suspected concussions. These procedures will be amended as needed to align with Board of Education and Code of Virginia requirements.

Definitions

- A. A concussion is a brain injury that is characterized by an onset of impairment of cognitive and/or physical functioning, and is caused by a blow to the head, face/neck, or to the body that causes a sudden jarring of the head (e.g., a helmet to the head, being knocked to the ground). A concussion can occur with or without a loss of consciousness. Proper management is essential to the immediate safety and long-term future of the injured individual. A concussion can be difficult to diagnose. Failing to recognize the signs and symptoms in a timely fashion can have dire consequences.
- B. Second Impact Syndrome occurs when a student-athlete, who has already sustained a head injury, sustains a second head injury before symptoms have fully resolved from the first injury. Often this occurs because the student has returned to activity before his or her first injury symptoms resolve. Coaches, parents, and athletes must realize that days or weeks may be needed before concussion symptoms resolve. When a student receives a second blow to the head, it can result in loss of brain function, decreased blood supply, and increased intracranial pressure. The athletic community must recognize the signs and symptoms of concussion/mild traumatic brain injury (MTBI) and limit physical and cognitive activity until the symptoms have completely resolved.
- C. Appropriate licensed health care provider (LHCP) is a physician, physician assistant, osteopath, or certified athletic trainer (ATC) licensed by the Virginia Board of Medicine; a neuropsychologist licensed by the Board of Psychology; or a nurse practitioner licensed by the Virginia State Board of Nursing.
- D. ImPACT is a computerized neuropsychological test and concussion assessment tool that measures several aspects of brain function, including attention span, working memory, sustained and selective attention time, response variability, non-verbal problem solving, and reaction time.
- E. Return to play means a participant may begin participation in a non-medically supervised practice, game, or athletic competition.
- F. Cognitive rest means limiting cognitive exertion and careful management of neurometabolic demands on the brain during recovery.

- G. Return to learn means instructional modifications that support a controlled progressive increase in cognitive activities while the student recovers from a brain injury (i.e., concussion) allowing the student to participate in classroom activities and learn without worsening symptoms and potentially delaying healing.
- H. Non-interscholastic youth sports program means a recreational athletic program organized for youth that is not affiliated with a public or non-public school.
- I. Concussion Management Team (CMT) is a subcommittee of the Health and Safety Advisory committee. The CMT is formed to support and ensure continuity of care and support for a student recovering from a concussion injury. The concussion management team consists of a school administrator, an athletic administrator, a licensed health care provider, a coach, a parent or guardian of a student-athlete, a student-athlete and any such other person or persons the superintendent determines will assist the CMT in its actions. Additional members may include, but is not limited, to the following: school counselor, school psychologist, school nurse, and teachers.

II. Concussion Policy Review Team

The Health and Safety Advisory Committee reviews and revises as needed, the local concussion management policy and concussion education content on an annual basis, as presented by the CMT. The athletic director shall be responsible for scheduling this annual review.

III. Training and Education

- A. All coaches, school health nurses, certified athletic trainers, health and physical education staff, volunteer coaches, participating students, and parents/guardians of participating students will complete concussion training annually that shall include the following:
 1. Recognition of the signs and symptoms associated with a concussion and the impact on the participating student;
 2. Process for reporting a concussion;
 3. Strategies to reduce the risk of concussions;
 4. Description of KGCS concussion management process;
 5. Obtaining proper medical treatment for a person suspected of having a concussion;
 6. Protocol for return to play or training after sustaining a concussion; and
 7. Protocol for KGCS return to learn.
- B. Athletics - Every coach, assistant coach, school staff, adult volunteer, or other person serving in a coaching or advisory role over student-athletes during games, competitions, or practices receives annual training in the signs and symptoms of sports-related concussions, strategies to reduce the risk of concussions, how to seek proper medical treatment for concussions, and the process by which a concussed student-athlete may safely return to practice or competition.

This training may include, but is not limited to: the National Federation of State High School Associations (NFHS) "Concussions in Sports" training tool; the CDC "HeadsUp" training tool; and the Oregon Center for Applied Sciences ACTIVE course. Once the training is completed, a copy of the completion certificate shall be kept on file by the athletic department. The athletic administrators from each school shall provide the list of staff that has met this requirement to the Office of Student and Family Services.

- on-line C. School Staff - Annually, all administrators and staff will receive information on concussion management and return-to-learn protocols. This training may include: updates and review of the

CDC or other nationally recognized medical organization's fact sheets on concussion information and management; professional development provided by members of the CMT, including the athletic trainer and school nurse.

Staff will become familiar with their role in the recovery process, identification of the recurrence of symptoms, and protocol for concussion injury management. School personnel will be aware of cognitive and academic issues that may be experienced by a student who has suffered a concussion or other head injury, including (i) difficulty with concentration, organization and long-term and short-term memory; (ii) sensitivity to bright lights and sounds; and (iii) short-term problems with speech and language, reasoning, planning and problem solving.

- D. Parent and Student Education – Prior to participation in any extracurricular athletic activity, each participating student and the participating student's parent or guardian shall review, on an annual basis, information on concussions as provided by the school division. After reviewing materials describing the short- and long-term health effects of concussions, each participating student and the participating student's parent or guardian shall sign and return the "KGCS Athletics Handbook Statement of Understanding." This signature will serve to acknowledge receipt, review, and understanding of all information.

Face-to-face Education – All middle and high school student-athletes who are trying out for a school sport for the first time, or are new to King George County Schools, must attend a face-to-face concussion training provided by the CMT with their parent or guardian prior to participating in tryouts for a sport season.

- E. Athletic directors at both the middle school and high school are responsible for providing the dates of the required training and collecting the signed documents from in-season student-athletes. Multiple sport student-athletes and parents do not have to repeat training in the current year if proper documentation exists.
- F. Certified Athletic Trainer Training Requirement – Athletic trainer's training may include, but is not limited to: ImPACT Assessment, the Sideline Assessment for Concussions (SAC), Standardized Assessment of Concussion, Virginia Neurological Index (SAC VNI), and the Acute Concussion Evaluation (ACE).

IV. Student-Athlete Care

- A. The following athletes shall complete the baseline ImPACT test as soon as possible and prior to the first athletic contest of each season:

1. All current 9th and 11th grade students.
2. Student-athletes that have not been previously tested by KGCS regardless of grade level.
3. Any student-athlete with a history of concussions.

All student-athletes tested on the baseline test or post-injury test must be monitored by an athletic trainer or other administrator while being assessed. At the start of the testing, the demographic information should be entered systematically by the supervising staff member.

- B. Removal from Activities - Any student-athlete suspected by their coach, athletic trainer, athletic director, or team physician of sustaining a concussion or brain injury in a practice or game shall be immediately removed from the activity, evaluated, and referred for further treatment if necessary. A student-athlete who has been removed from play, evaluated, and suspected to have a concussion or brain injury, shall not return to play that same day.

In the event that a suspected concussion occurs at an activity and no athletic trainer or emergency medical personnel are present, the coach, sponsor, or point of contact will remove the student from the activity immediately; will not permit the student-athlete to re-enter the practice or game on the same day; and will contact the parent/guardian and/or emergency rescue to have the student placed under physician's care as soon as possible.

- SCAT II
Appendix 1
- C. At the time of injury, for high school athletic events, sideline testing will be completed by the ATC or team physician using the Standardized Assessment of Concussion, Virginia Neurological Index (SAC VNI) assessment, or other appropriate assessments such as Sideline Concussion Assessment Tool (SCAT-II); the Standardized Assessment of Concussion (SAC), and the Balance Error Scoring System (BESS). Within 48-72 hours post injury, the athlete will complete ImPACT follow-up testing. Evaluation findings and home care recommendations will be completed on the Acute Concussion Evaluation (ACE) form by the ATC.

The determination of whether a student-athlete removed from play is suspected of having sustained a concussion shall be the sole determination of the licensed health care provider or athletic trainer conducting the concussion sideline assessment. Such determination is final and may not be overruled by another licensed health care provider or other properly trained individual, coach, assistant coach, school staff, or other person serving in a coaching or advisory role, the student-athlete, or the parent or guardian of the student-athlete.

The coach of a student-athlete may elect not to return the student-athlete to play, even if after the concussion sideline assessment it is determined that the student-athlete is no longer suspected of having sustained a concussion.

- D. Return to Play - *High School* - No high school student-athlete shall be allowed to return to extracurricular physical activities, which includes the student-athlete's practices, games or competitions, until the athletic trainer determines that the student-athlete has successfully completed a progressive return to sports participation program. The length of progressive return to sports participation program shall be determined by the athletic trainer but shall last a minimum of five calendar days.

If a student-athlete has been treated by a licensed health care provider, the student-athlete must present a written medical release from said provider. The written medical release shall certify that (i) the provider is aware of the current medical guidance on concussion evaluation and management; and (ii) the student-athlete no longer exhibits signs symptoms or behaviors consistent with a concussion at rest or with exertion. This releases the student-athlete to the athletic trainer to begin a progressive return to sports participation program. The length of progressive return to sports participation program shall last a minimum of five calendar days.

No member of a school athletic team shall participate in any athletic event or practice the same day he or she is injured and exhibits signs, symptoms, or behaviors attributable to a concussion; or has been diagnosed with a concussion.

No member of a high school athletic team shall return to participate in an athletic event or training on the days after he/she experiences a concussion unless all of the following conditions have been met: the student no longer exhibits signs, symptoms, or behaviors consistent with a concussion at rest or with exertion; the student is asymptomatic during or following periods of supervised exercise that is gradually intensifying; successful completion of neurocognitive post-injury testing.

Middle School - No middle school student-athlete shall be allowed to return to extracurricular physical activities, which includes the student-athlete's practices, games or competitions, until the student presents a written medical release from the student-athlete's licensed health care provider. The written medical release shall certify that (i) the provider is aware of the current medical guidance on concussion evaluation and management; (ii) the student-athlete no longer exhibits signs symptoms or behaviors consistent with a concussion at rest or with exertion; and (iii) that the student-athlete has successfully completed a progressive return to sports participation program. The length of progressive return to sports participation program shall be determined by the student-athlete's licensed health care provider but shall last a minimum of five calendar days.

No member of a middle school athletic team shall return to participate in an athletic event or training on the days after he/she experiences a concussion unless all of the following conditions have been met: the student no longer exhibits signs, symptoms, or behaviors consistent with a concussion at rest or with exertion; the student is asymptomatic during or following periods of supervised exercise that is gradually intensifying; and the student receives a written medical release from a licensed health care provider.

Using an individualized step progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. Generally, each step should take 24 hours so that an athlete would take approximately one week to proceed through the full rehabilitation protocol once they are asymptomatic at rest and with provocative exercise. If any post-concussion symptoms occur while in the stepwise program, then the patient should drop back to the previous asymptomatic level and try to progress again after a further 24-hour period of rest has passed.

Example of the Level of Progression for Return to Play

Rehabilitation phase	Functional exercise at each stage of rehabilitation	Objective of each phase
Phase 1: No activity	Complete physical and cognitive rest.	Recovery
Phase 2: Light aerobic exercise	Walking, swimming, or stationary cycling keeping intensity <70% MPPHR. No resistance training.	Increase HR
Phase 3: Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities.	Add movement
Phase 4: Non-contact training drills	Progression to more complex training drills (e.g., passing drills in football and ice hockey. May start progressive resistance training).	Exercise, coordination, cognitive load
Phase 5: Full contact practice	Following medical clearance; participate in normal training activities.	Restore confidence, assessment of functional skills by coaching staff
Phase 6: Return to play	Normal game play.	

- A. Students sustaining a concussion who are reporting numerous symptoms such as headache, dizziness, fatigue, and inability to concentrate shall be encouraged to limit scholastic activities and other cognitive stressors. Cognitive rest shall be an important component for the recovery from concussion injuries.

Student recovery from a concussion requires a collaborative approach among school professionals, health care providers, parents, and students. All KGCS teachers who have been informed by parents or school staff that a student has sustained a concussion shall communicate in a timely manner with school administrators and school health nurses, athletic trainers, and essential staff to ensure appropriate accommodations are available during recovery. This cognitive rest may require scholastic modifications varying on a continuum from not attending school while symptomatic to attending school with academic accommodations.

B. Return to Learn (RTL)

1. A student recovering from a brain injury shall gradually increase cognitive activities progressing through *some or all* of the following phases. Some students may need total rest with a gradual return to school, while others will be able to continue doing academic work with minimal instructional modifications. The decision to progress from one phase to another should reflect the absence of any relevant signs or symptoms, and should be based on the recommendation of the student's appropriate licensed health care provider in collaboration with school staff, including athletic trainer, teachers, school counselors, school administrators, psychologists, nurses, or others as determined by the Concussion Management Team (CMT).

a. Home: Rest

Phase 1: Cognitive and physical rest may include:

- Minimal cognitive activities – limit reading, computer use, texting, television, and/or video games;
- No homework;
- No driving; and
- Minimal physical activity.

Phase 2: Light cognitive mental activity may include:

- Up to 30 minutes of sustained cognitive exertion;
- No prolonged concentration;
- No driving; and
- Limited physical activity.

Student will progress to part-time school attendance when able to tolerate a minimum of 30 minutes of sustained cognitive exertion without exacerbation of symptoms or re-emergence of previously resolved symptoms.

b. School: Part-time

Phase 3: Maximum instructional modifications including, but not limited to:

- Shortened days with built-in breaks;
- Modified environment (e.g., limiting time in hallway, identifying quiet and/or dark spaces);
- Established learning priorities;
- Exclusion from standardized and classroom testing;
- Rest and recovery once out of school; and
- Elimination or reduction of homework.

Student will progress to the moderate instructional modification phase when able to

tolerate part-time return with moderate instructional modifications without exacerbation of symptoms or re-emergence of previously resolved symptoms.

Phase 4: Moderate instructional modification including, but not limited to:

- Established priorities for learning;
- Limited homework;
- Alternative grading strategies;
- Built-in breaks;
- Modified and/or limited classroom testing, exclusion from standardized testing; and
- Reduction of extra time, assistance, and/or modification of assignments as needed.

Student will progress to the minimal instructional modification phase when able to tolerate full-time school attendance without exacerbation of existing symptoms or re-emergence of previously resolved symptoms.

c. School: Full-time

Phase 5: Minimal instructional modification – instructional strategies may include, but are not limited to:

- Built-in breaks;
- Limited formative and summative testing, exclusion from standardized testing;
- Reduction of extra time, assistance, *and* modification of assignments; and
- Continuation of instructional modification and support in academically challenging subjects that require cognitive overexertion and stress.

Student will progress to non-modified school participation when able to handle sustained cognitive exertion without exacerbation of symptoms or re-emergence of previously resolved symptoms.

Phase 6: Attends all classes; maintains full academic load/homework; requires no instructional modifications.

2. Progression through the above phases shall be governed by the presence or resolution of symptoms resulting from a concussion experienced by the student including, but are not limited to:

- a. Difficulty with attention, concentration, organization, long-term and short-term memory, reasoning, planning, and problem solving;
- b. Fatigue, drowsiness, difficulties handling a stimulating school environment (e.g., sensitivity to light and sound);
- c. Inappropriate or impulsive behavior during class, greater irritability, less able to cope with stress, more emotional than usual; and
- d. Physical symptoms (e.g., headache, nausea, dizziness).

3. Progression through gradually increasing cognitive demands should adhere to the following guidelines:

- a. Increase the amount of time in school;
- b. Increase the nature and amount of work, the length of time spent on the work, or the type or difficulty of work (change only one of these variables at a time);
- c. If symptoms do not worsen, demands may continue to be gradually increased; and
- d. If symptoms do worsen, the activity should be discontinued for at least 20 minutes and the student allowed to rest.

- 1) If the symptoms are relieved with rest, the student may reattempt the activity at or below the level that produced symptoms; and
 - 2) If the symptoms are not relieved with rest, the student should discontinue the current activity for the day and reattempt when symptoms have lessened or resolves (such as the next day).
4. If symptoms persist or fail to improve over time, additional in-school support may be required with consideration for further evaluation. If the student is three to four weeks post injury without significant evidence of improvement, a 504 plan should be considered.
 5. A student-athlete shall progress to a stage where he or she no longer requires instructional modifications or other support before being cleared to return to full athletic participation (return-to-play).

The American Academy of Pediatrics (AAP) Return to Learn Following a Concussion Guidelines (October 2013), and the American Medical Society for Sports Medicine (AMSSM) Position Statement (2013), are available online to assist health care providers, student-athletes, their families, and school divisions, as needed.

VI. Helmet Replacement and Recondition Procedures

1. Helmets used for athletic participation must meet National Operating Committee on Standards for Athletic Equipment (NOCSAE) certified by the manufacturer at time of purchase. (Helmets included are football, softball, and baseball).
2. Football helmets that are ten years old from the manufacturing date will be removed from use.
3. Helmets must be NOCSAE inspected according to the manufacturer's recommendations.
4. Reconditioned helmets must be NOCSAE recertified by a certified reconditioning vendor.
5. A minimum of two staff members at each school will be trained in the proper fitting of football helmets. Football helmets must be fitted properly at the time of issuance by these trained staff members.
6. Personal helmets used for softball, and baseball, must meet NOCSAE standards and be checked by School Division staff to ensure that the helmet has not been modified from its intended design.

VII. Community Involvement and Community Information Access

Non-interscholastic youth sports programs utilizing public school property shall:

- Establish policies and procedures regarding identification and handling of suspected concussions in student-athletes consistent with either the school division's policies and procedures; or
- Follow the school division's policies and procedures as set forth by the school division.
- Concussion training resources and materials will be made available on the KGCS athletic website and on each high school and middle school athletic web page.
- Schools shall make every effort to collaborate with organizations sponsoring athletic activity for student-athletes on school property to provide materials and training opportunities related to concussion management if requested.



Graduated Return to Play Protocol

<p>1. NO ACTIVITY (RECOVERY)</p> <p>Clinical Examination Cognitive Baseline and Medical Clearance</p>	<p>2. LIGHT AEROBIC EXERCISE (INCREASE HEART RATE)</p> <p>Walking Swimming Stationary Cycling</p> <p>Heart Rate <70% - 15 min</p>	<p>3. SPORT SPECIFIC EXERCISE (ADD MOVEMENT)</p> <p>Skating Drills (Ice Hockey) Running Drills (Soccer, etc)</p> <p>NO Head Impact Activities</p> <p>Heart Rate <80% - 45 min</p>	<p>4. NON-CONTACT TRAINING DRILLS (INCREASED EXERCISE, COORDINATION & ATTENTION)</p> <p>Progress to Complex Training Drills (e.g., Passing Drills, etc)</p> <p>May Start Resistance Training</p> <p>Heart Rate <90% - 60 min</p>	<p>5. FULL CONTACT PRACTICE (RESTORE CONFIDENCE & ASSESS FUNCTIONAL SKILLS)</p> <p>If Symptom Free, Return to Normal Training Activities</p>
<p>Symptom Free for 24 Hours?</p> <p>Yes: Begin Step 2</p> <p>No: Continue Resting</p>	<p>Symptom Free for Next 24 hours?</p> <p>Yes: Move to Step 3</p> <p>No: Rest Further until Symptom Free</p>	<p>Symptom Free for Next 24 Hours?</p> <p>Yes: Move to Step 4</p> <p>No: Return to Step 2 until Symptom Free</p>	<p>Symptom Free for Next 24 Hours?</p> <p>Yes: Move to Step 5</p> <p>No: Return to Step 3 until Symptom Free</p>	<p>Symptom Free Next 24 Hours?</p> <p>Yes: Return to Play</p> <p>No: Return to Step 4 until Symptom Free</p>
<p>Date Attained:</p>	<p>Date Attained:</p>	<p>Date Attained:</p>	<p>Date Attained:</p>	<p>Date Attained:</p>

Reference: Consensus Statement on Concussion in Sport: the 3rd International Conference on Concussion in Sport held in Zurich (2008), Br J of Sports Med 2009; 43: i76-i84 doi:10.1136/bjsm.2009.058248



Page: SAC Listing

Institution: King George High School

Current User: Matt Stemmler

Athlete: [REDACTED]

[Database](#)
[Admin](#)
[Reports](#)
[e-Mail](#)
[Utilities](#)
[Defaults](#)
[Picklists](#)

[DASHBOARD](#)

[Logout](#)



ADD

ADD
BRAINCHECK

UPDATE

DELETE

PREVIEW

PRINT

TASK

TRENDING

TOOLBOX

Import

BRAINCHECK

IMPACT

Concussion

[SHOW ALL](#)

narrow by:

Select an athlete...

Select a sport...

Select a group...

View: ☒ Closed Injuries ☐ Deleted Records

Full Name	Injury	Type	Date	Ref	Exam	Total	Ori	Imm	Conc	Dly	Sym	GCS	Mad	Bal	Gait	Coor	Active	Closed	Hidden
[REDACTED]	Concussion	SCAT5	12/11/2017	A		25	5	14	2	4	39	0	0	2	0	0			
[REDACTED]	Concussion	SCAT5	12/6/2017	C	Day1	27	4	15	3	5	43	0	0	4	0	0			
[REDACTED]	Concussion	SCAT5	11/17/2017	C	Injury	26	4	15	3	4	55	0	0	0	0	0			
[REDACTED]	ImPACT	ImPACT	12/1/2016		Baseline	0	0	0	0	0	0	0	0	0	0	0			
[REDACTED]	ImPACT	ImPACT	12/2/2014		Baseline	0	0	0	0	0	0	0	0	0	0	0			

IMMEDIATE OR ON-FIELD ASSESSMENT

The following elements should be assessed for all athletes who are suspected of having a concussion prior to proceeding to the neurocognitive assessment and ideally should be done on-field after the first first aid / emergency care priorities are completed.

If any of the "Red Flags" or observable signs are noted after a direct or indirect blow to the head, the athlete should be immediately and safely removed from participation and evaluated by a physician or licensed healthcare professional.

Consideration of transportation to a medical facility should be at the discretion of the physician or licensed healthcare professional.

The GCS is important as a standard measure for all patients and can be done serially if necessary in the event of deterioration in conscious state. The Maddocks questions and cervical spine exam are critical steps of the immediate assessment; however, these do not need to be done serially.

STEP 1: RED FLAGS

RED FLAGS:

- Neck pain or tenderness
- Double vision
- Weakness or tingling/burning in arms or legs
- Severe or increasing headache
- Seizure or convulsion
- Loss of consciousness
- Deteriorating conscious state
- Vomiting
- Increasingly restless, agitated or combative

STEP 2: OBSERVABLE SIGNS

Witnessed ☐ Observed on Video ☐

- Lying motionless on the playing surface
- Balance / gait difficulties / motor incoordination: stumbling, slow / laboured movements
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Facial injury after head trauma

Y	N
Y	N
Y	N
Y	N
Y	N

STEP 3: MEMORY ASSESSMENT MADDOCKS QUESTIONS²

"I am going to ask you a few questions, please listen carefully and give your best effort. First, tell me what happened?"

Mark Y for correct answer / N for incorrect

- What venue are we at today?
- Which half is it now?
- Who scored last in this match?
- What team did you play last week / game?
- Did your team win the last game?

Y	N
Y	N
Y	N
Y	N
Y	N

Note: Appropriate sport-specific questions may be substituted.

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

STEP 4: EXAMINATION GLASGOW COMA SCALE (GCS)³

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

CERVICAL SPINE ASSESSMENT

Does the athlete report that their neck is pain free at rest?	Y	N
If there is NO neck pain at rest, does the athlete have a full range of ACTIVE pain free movement?	Y	N
Is the limb strength and sensation normal?	Y	N

In a patient who is not lucid or fully conscious, a cervical spine injury should be assumed until proven otherwise.

OFFICE OR OFF-FIELD ASSESSMENT

Please note that the neurocognitive assessment should be done in a distraction-free environment with the athlete in a resting state.

STEP 1: ATHLETE BACKGROUND

Sport / team / school: _____

Date / time of injury: _____

Years of education completed: _____

Age: _____

Gender: M / F / Other

Dominant hand: left / neither / right

How many diagnosed concussions has the athlete had in the past?: _____

When was the most recent concussion?: _____

How long was the recovery (time to being cleared to play) from the most recent concussion?: _____ (days)

Has the athlete ever been:

Hospitalized for a head injury?

Yes	No
-----	----

Diagnosed / treated for headache disorder or migraines?

Yes	No
-----	----

Diagnosed with a learning disability / dyslexia?

Yes	No
-----	----

Diagnosed with ADD / ADHD?

Yes	No
-----	----

Diagnosed with depression, anxiety or other psychiatric disorder?

Yes	No
-----	----

Current medications? If yes, please list:

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

STEP 2: SYMPTOM EVALUATION

The athlete should be given the symptom form and asked to read this instruction paragraph out loud then complete the symptom scale. For the baseline assessment, the athlete should rate his/her symptoms based on how he/she typically feels and for the post injury assessment the athlete should rate their symptoms at this point in time.

Please Check: ☐ Baseline ☐ Post-Injury

Please hand the form to the athlete

	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
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
Trouble falling asleep (if applicable)	0	1	2	3	4	5	6

Total number of symptoms:

of 22

Symptom severity score:

of 132

Do your symptoms get worse with physical activity?

Y	N
---	---

Do your symptoms get worse with mental activity?

Y	N
---	---

If 100% is feeling perfectly normal, what percent of normal do you feel?

If not 100%, why?

Please hand form back to examiner

STEP 3: COGNITIVE SCREENING

Standardised Assessment of Concussion (SAC)*

ORIENTATION

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	5	

IMMEDIATE MEMORY

The Immediate Memory component can be completed using the traditional 5-word per trial list or optionally using 10-words per trial to minimise any ceiling effect. All 3 trials must be administered irrespective of the number correct on the first trial. Administer at the rate of one word per second.

Please choose EITHER the 5 or 10 word list groups and circle the specific word list chosen for this test.

I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order. For Trials 2 & 3: I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before.

List	Alternate 5 word lists					Score (of 5)		
						Trial 1	Trial 2	Trial 3
A	Finger	Penny	Blanket	Lemon	Insect			
B	Candle	Paper	Sugar	Sandwich	Wagon			
C	Baby	Monkey	Perfume	Sunset	Iron			
D	Elbow	Apple	Carpet	Saddle	Bubble			
E	Jacket	Arrow	Pepper	Cotton	Movie			
F	Dollar	Honey	Mirror	Saddle	Anchor			
Immediate Memory Score						5		
Time that last trial was completed								

List	Alternate 10 word lists					Score (of 10)		
						Trial 1	Trial 2	Trial 3
G	Finger	Penny	Blanket	Lemon	Insect			
	Candle	Paper	Sugar	Sandwich	Wagon			
H	Baby	Monkey	Perfume	Sunset	Iron			
	Elbow	Apple	Carpet	Saddle	Bubble			
I	Jacket	Arrow	Pepper	Cotton	Movie			
	Dollar	Honey	Mirror	Saddle	Anchor			
Immediate Memory Score						10		
Time that last trial was completed								

Name: _____
 DOB: _____
 Address: _____
 ID number: _____
 Examiner: _____
 Date: _____

CONCENTRATION**DIGITS BACKWARDS**

Please circle the Digit list chosen (A, B, C, D, E, F). Administer at the rate of one digit per second reading DOWN the selected column.

I am going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7.

Concentration Number Lists (circle one)

List A	List B	List C			
4-9-3	5-2-6	1-4-2	Y	N	0
6-2-9	4-1-5	6-5-8	Y	N	1
3-8-1-4	1-7-9-5	6-8-3-1	Y	N	0
3-2-7-9	4-9-6-8	3-4-8-1	Y	N	1
6-2-9-7-1	4-8-5-2-7	4-9-1-5-3	Y	N	0
1-5-2-8-6	6-1-8-4-3	6-8-2-5-1	Y	N	1
7-1-8-4-6-2	8-3-1-9-6-4	3-7-6-5-1-9	Y	N	0
5-3-9-1-4-8	7-2-4-8-5-6	9-2-6-5-1-4	Y	N	1
List D	List E	List F			
7-8-2	3-8-2	2-7-1	Y	N	0
9-2-6	5-1-8	4-7-9	Y	N	1
4-1-8-3	2-7-9-3	1-6-8-3	Y	N	0
9-7-2-3	2-1-6-9	3-9-2-4	Y	N	1
1-7-9-2-6	4-1-8-6-9	2-4-7-5-8	Y	N	0
4-1-7-5-2	9-4-1-7-5	8-3-9-6-4	Y	N	1
2-6-4-8-1-7	6-9-7-3-8-2	5-8-6-2-4-9	Y	N	0
8-4-1-9-3-5	4-2-7-9-3-8	3-1-7-8-2-6	Y	N	1
Digits Score:					

MONTHS IN REVERSE ORDER

Now tell me the months of the year in reverse order. Start with the last month and go backward. So you'll say December, November. Go ahead.

Dec - Nov - Oct - Sept - Aug - Jul - Jun - May - Apr - Mar - Feb - Jan	0	1
Months Score	1	
Concentration Total Score (Digits + Months)	1	

4

STEP 4: NEUROLOGICAL SCREEN

See the instruction sheet (page 7) for details of test administration and scoring of the tests.

Can the patient read aloud (e.g. symptom check-list) and follow instructions without difficulty?	Y	N
Does the patient have a full range of pain-free PASSIVE cervical spine movement?	Y	N
Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision?	Y	N
Can the patient perform the finger nose coordination test normally?	Y	N
Can the patient perform tandem gait normally?	Y	N

BALANCE EXAMINATION**Modified Balance Error Scoring System (mBESS) testing⁵**

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

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

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

Condition	Errors
Double leg stance	of 10
Single leg stance (non-dominant foot)	of 10
Tandem stance (non-dominant foot at the back)	of 10
Total Errors	of 30

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

5

STEP 5: DELAYED RECALL:

The delayed recall should be performed after 5 minutes have elapsed since the end of the Immediate Recall section. Score 1 pt. for each correct response.

Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.

Time Started _____

Please record each word correctly recalled. Total score equals number of words recalled.

Total number of words recalled accurately: of 5 or of 10

6

STEP 6: DECISION

	Date & time of assessment:		
Domain			
Symptom number (of 22)			
Symptom severity score (of 132)			
Orientation (of 5)			
Immediate memory	of 15 of 30	of 15 of 30	of 15 of 30
Concentration (of 5)			
Neuro exam	Normal Abnormal	Normal Abnormal	Normal Abnormal
Balance errors (of 30)			
Delayed Recall	of 5 of 10	of 5 of 10	of 5 of 10

Date and time of injury: _____

If the athlete is known to you prior to their injury, are they different from their usual self?

☐ Yes ☐ No ☐ Unsure ☐ Not Applicable

(If different, describe why in the clinical notes section)

Concussion Diagnosed?

☐ Yes ☐ No ☐ Unsure ☐ Not Applicable

If re-testing, has the athlete improved?

☐ Yes ☐ No ☐ Unsure ☐ Not Applicable

I am a physician or licensed healthcare professional and I have personally administered or supervised the administration of this SCAT5.

Signature: _____

Name: _____

Title: _____

Registration number (if applicable): _____

Date: _____

SCORING ON THE SCAT5 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.

INSTRUCTIONS

Words in *Italics* throughout the SCAT5 are the instructions given to the athlete by the clinician

Symptom Scale

The time frame for symptoms should be based on the type of test being administered. At baseline it is advantageous to assess how an athlete "typically" feels whereas during the acute/post-acute stage it is best to ask how the athlete feels at the time of testing.

The symptom scale should be completed by the athlete, not by the examiner. In situations where the symptom scale is being completed after exercise, it should be done in a resting state, generally by approximating his/her resting heart rate.

For total number of symptoms, maximum possible is 22 except immediately post injury, if sleep item is omitted, which then creates a maximum of 21.

For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132, except immediately post injury if sleep item is omitted, which then creates a maximum of 21x6=126.

Immediate Memory

The Immediate Memory component can be completed using the traditional 5-word per trial list or, optionally, using 10-words per trial. The literature suggests that the Immediate Memory has a notable ceiling effect when a 5-word list is used. In settings where this ceiling is prominent, the examiner may wish to make the task more difficult by incorporating two 5-word groups for a total of 10 words per trial. In this case, the maximum score per trial is 10 with a total trial maximum of 30.

Choose one of the word lists (either 5 or 10). Then perform 3 trials of immediate memory using this list.

Complete all 3 trials regardless of score on previous trials.

"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order." The words must be read at a rate of one word per second.

Trials 2 & 3 MUST be completed regardless of score on trial 1 & 2.

Trials 2 & 3:

"I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before."

Score 1 pt. for each correct response. Total score equals sum across all 3 trials. Do NOT inform the athlete that delayed recall will be tested.

Concentration

Digits backward

Choose one column of digits from lists A, B, C, D, E or F and administer those digits as follows:

Say: *"I am going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7."*

Begin with first 3 digit string.

If correct, circle "Y" for correct and go to next string length. If incorrect, circle "N" for the first string length and read trial 2 in the same string length. One point possible for each string length. Stop after incorrect on both trials (2 N's) in a string length. The digits should be read at the rate of one per second.

Months in reverse order

"Now tell me the months of the year in reverse order. Start with the last month and go backward. So you'll say December, November ... Go ahead"

1 pt. for entire sequence correct

Delayed Recall

The delayed recall should be performed after 5 minutes have elapsed since the end of the Immediate Recall section.

"Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order."

Score 1 pt. for each correct response

Modified Balance Error Scoring System (mBESS)⁵ testing

This balance testing is based on a modified version of the Balance Error Scoring System (BESS)⁵. A timing device is required for this testing.

Each of 20-second trial/stance is scored by counting the number of errors. The examiner will begin counting errors only after the athlete has assumed the proper start position. The modified BESS is calculated by adding one error point for each error during the three 20-second tests. The maximum number of errors for any single condition is 10. If the athlete commits multiple errors simultaneously, only

one error is recorded but the athlete should quickly return to the testing position, and counting should resume once the athlete is set. Athletes that are unable to maintain the testing procedure for a minimum of five seconds at the start are assigned the highest possible score, ten, for that testing condition.

OPTION: For further assessment, the same 3 stances can be performed on a surface of medium density foam (e.g., approximately 50cm x 40cm x 6cm).

Balance testing – types of errors

- | | | |
|---------------------------------|---|---|
| 1. Hands lifted off iliac crest | 3. Step, stumble, or fall | 5. Lifting forefoot or heel |
| 2. Opening eyes | 4. Moving hip into > 30 degrees abduction | 6. Remaining out of test position > 5 sec |

"I am now going to test your balance. Please take your shoes off (if applicable), roll up your pant legs above ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of three twenty second tests with different stances."

(a) Double leg stance:

"The first stance is standing with your feet together with your hands on your hips and with your eyes closed. You should try to maintain stability in that position for 20 seconds. I will be counting the number of times you move out of this position. I will start timing when you are set and have closed your eyes."

(b) Single leg stance:

"If you were to kick a ball, which foot would you use? [This will be the dominant foot] Now stand on your non-dominant foot. The dominant leg should be held in approximately 30 degrees of hip flexion and 45 degrees of knee flexion. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes."

(c) Tandem stance:

"Now stand heel-to-toe with your non-dominant foot in back. Your weight should be evenly distributed across both feet. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes."

Tandem Gait

Participants are instructed to stand with their feet together behind a starting line (the test is best done with footwear removed). Then, they walk in a forward direction as quickly and as accurately as possible along a 38mm wide (sports tape), 3 metre line with an alternate foot heel-to-toe gait ensuring that they approximate their heel and toe on each step. Once they cross the end of the 3m line, they turn 180 degrees and return to the starting point using the same gait. Athletes fail the test if they step off the line, have a separation between their heel and toe, or if they touch or grab the examiner or an object.

Finger to Nose

"I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your arm (either right or left) outstretched (shoulder flexed to 90 degrees and elbow and fingers extended), pointing in front of you. When I give a start signal, I would like you to perform five successive finger to nose repetitions using your index finger to touch the tip of the nose, and then return to the starting position, as quickly and as accurately as possible."

References

1. McCrory et al. Consensus Statement On Concussion In Sport – The 5th International Conference On Concussion In Sport Held In Berlin, October 2016. British Journal of Sports Medicine 2017 (available at www.bjsm.bmj.com)
2. Maddocks, DL; Dicker, GD; Saling, MM. The assessment of orientation following concussion in athletes. Clinical Journal of Sport Medicine 1995; 5: 32-33
3. Jennett, B., Bond, M. Assessment of outcome after severe brain damage: a practical scale. Lancet 1975; i: 480-484
4. McCrea M. Standardized mental status testing of acute concussion. Clinical Journal of Sport Medicine. 2001; 11: 176-181
5. Guskiewicz KM. Assessment of postural stability following sport-related concussion. Current Sports Medicine Reports. 2003; 2: 24-30

CONCUSSION INFORMATION

Any athlete suspected of having a concussion should be removed from play and seek medical evaluation.

Signs to watch for

Problems could arise over the first 24-48 hours. The athlete should not be left alone and must go to a hospital at once if they experience:

- Worsening headache
- Repeated vomiting
- Weakness or numbness in arms or legs
- Drowsiness or inability to be awakened
- Unusual behaviour or confusion or irritable
- Unsteadiness on their feet.
- Inability to recognize people or places
- Seizures (arms and legs jerk uncontrollably)
- Slurred speech

Consult your physician or licensed healthcare professional after a suspected concussion. **Remember, it is better to be safe.**

Rest & Rehabilitation

After a concussion, the athlete should have physical rest and relative cognitive rest for a few days to allow their symptoms to improve. In most cases, after no more than a few days of rest, the athlete should gradually increase their daily activity level as long as their symptoms do not worsen. Once the athlete is able to complete their usual daily activities without concussion-related symptoms, the second step of the return to play/sport progression can be started. The athlete should not return to play/sport until their concussion-related symptoms have resolved and the athlete has successfully returned to full school/learning activities.

When returning to play/sport, the athlete should follow a stepwise, **medically managed exercise progression, with increasing amounts of exercise.** For example:

Graduated Return to Sport Strategy

Exercise step	Functional exercise at each step	Goal of each step
1. Symptom-limited activity	Daily activities that do not provoke symptoms.	Gradual reintroduction of work/school activities.
2. Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training.	Increase heart rate.
3. Sport-specific exercise	Running or skating drills. No head impact activities.	Add movement.
4. Non-contact training drills	Harder training drills, e.g., passing drills. May start progressive resistance training.	Exercise, coordination, and increased thinking.
5. Full contact practice	Following medical clearance, participate in normal training activities.	Restore confidence and assess functional skills by coaching staff.
6. Return to play/sport	Normal game play.	

In this example, it would be typical to have 24 hours (or longer) for each step of the progression. If any symptoms worsen while exercising, the athlete should go back to the previous step. Resistance training should be added only in the later stages (Stage 3 or 4 at the earliest).

Written clearance should be provided by a healthcare professional before return to play/sport as directed by local laws and regulations.

Graduated Return to School Strategy

Concussion may affect the ability to learn at school. The athlete may need to miss a few days of school after a concussion. When going back to school, some athletes may need to go back gradually and may need to have some changes made to their schedule so that concussion symptoms do not get worse. If a particular activity makes symptoms worse, then the athlete should stop that activity and rest until symptoms get better. To make sure that the athlete can get back to school without problems, it is important that the healthcare provider, parents, caregivers and teachers talk to each other so that everyone knows what the plan is for the athlete to go back to school.

Note: If mental activity does not cause any symptoms, the athlete may be able to skip step 2 and return to school part-time before doing school activities at home first.

Mental Activity	Activity at each step	Goal of each step
1. Daily activities that do not give the athlete symptoms	Typical activities that the athlete does during the day as long as they do not increase symptoms (e.g. reading, texting, screen time). Start with 5-15 minutes at a time and gradually build up.	Gradual return to typical activities.
2. School activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work.
3. Return to school part-time	Gradual introduction of school-work. May need to start with a partial school day or with increased breaks during the day.	Increase academic activities.
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated.	Return to full academic activities and catch up on missed work.

If the athlete continues to have symptoms with mental activity, some other accommodations that can help with return to school may include:

- Starting school later, only going for half days, or going only to certain classes
- Taking lots of breaks during class, homework, tests
- More time to finish assignments/tests
- No more than one exam/day
- Quiet room to finish assignments/tests
- Shorter assignments
- Not going to noisy areas like the cafeteria, assembly halls, sporting events, music class, shop class, etc.
- Repetition/memory cues
- Use of a student helper/tutor
- Reassurance from teachers that the child will be supported while getting better

The athlete should not go back to sports until they are back to school/learning, without symptoms getting significantly worse and no longer needing any changes to their schedule.