

CONCUSSION MANAGEMENT PLAN



A. CONCUSSION MANAGEMENT PLAN

Albemarle County Public Schools (ACPS) recognizes that a concussion, as defined by the 2017 Concussion in Sport Group consensus statement, is a traumatic brain injury induced by biomechanical forces and with features clinically defined as:

- may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head;
- typically results in a rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours;
- may result in neuropathological changes, but the acute signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies [CT or MRI];
- results in a variety of clinical signs and symptoms that may or may not involve the loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged.
- results in signs and symptoms that cannot be explained by drug, alcohol, or medication use, other injuries (such as a neck injury) or other pre-existing or accompanying factors (e.g. psychological factors or other medical conditions).¹

Upon receipt of appropriate medical clearance, the **Athletic Trainer** will determine when the student-athlete may return to full physical activity based on successful completion of the sport specific progression program (see Appendix III). If an **AT** suspects an athlete has not fully recovered despite being medically cleared by another health care provider, he/she may refrain from returning an athlete back to play.

Clearance from a medical professional allows the student to begin the **Return to Learn** protocol. The Athletic Trainer will implement the **Return to Play** protocol when the student is fully recovered.

The majority of young student-athletes who are diagnosed with a concussion and allowed proper recovery time, will feel fully recovered within 10-14 days, however more recent evidence is suggestive that normal recovery may take approximately one month. A subset (10%-20%) of young student-athletes may experience persisting symptoms after concussion that may last beyond 30 days of their injury. It is important that young student-athletes who are experiencing persisting symptoms are examined and treated by qualified and licensed healthcare professionals.

ACPS is committed to safe practice and provides a Sports Concussion Management Plan to ensure that (i) an annual basis, coaches, athletic directors, administrators, volunteers, student-athletes, and their parents are educated about the short and long-term effects of concussions; (ii) student-athletes suspected of having a concussion will be removed from play immediately and referred appropriately; (iii) school personnel will be alert to cognitive and academic issues that may be experienced by a student who has suffered a concussion or other head injury; (iv) school personnel will accommodate the recovering student's gradual return to full participation in academic activities based on the recommendations of the student's certified athletic trainer or other licensed health care provider; (v) student-athletes who have sustained concussions are returned to play only after receiving appropriate medical care with written medical clearance, adequate time to heal, demonstrating no symptoms directly related to the concussion, and by making a full return to the classroom.

In accordance with Senate Bill 652, ACPS guidelines mandate that if a student-athlete exhibits or reports

any sign or symptom of a concussion, he/she will be removed from practice or play. Parents are notified on the day of the injury. The parents will obtain a proper medical evaluation by a licensed healthcare professional (physician, physician assistant, osteopath physician, certified athletic trainer, neuropsychologist or nurse practitioner) with training in concussion evaluation and management per the ACPS Sports Concussion Management Plan. ACPS acknowledges that clearance to return to learn is a medical decision. The student-athlete must work with the school's designated return to learn specialist (e.g. guidance counselor, school nurse, teacher liaison) and certified athletic trainer to follow the Gradual Return to Learn (Appendix II) and Return to Sports Participation protocol (Appendix III) of this document. **ACPS will not allow the student-athlete to participate in a practice or game while experiencing any lingering or persisting symptoms of a concussion.** The student-athlete must be symptom free at rest, during physical and mental exertion, with neurocognitive functioning and postural stability that has returned to pre-injury (baseline) values, as determined by the results from the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT), Tandem Gait, and Graded Concussion Symptom Checklist prior to return to full sports competition. A student who has been diagnosed with a concussion may concurrently restart gradual return to learn and return to light physical activity, but will not return to full sports competition until fully back to academics.

¹ Patriccios J, Schneider K, Dvorak J, et al. Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport — Amsterdam, October 2022. Br J Sports Med 2023 <https://doi.org/10.1136/bjsports-2023-106898>

B. DEFINITIONS

Sports-related Concussion: Sport-related concussion is a traumatic brain injury caused by a direct blow to the head, neck or body resulting in an impulsive force being transmitted to the brain that occurs in sports and exercise-related activities. This initiates a neurotransmitter and metabolic cascade, with possible axonal injury, blood flow change and inflammation affecting the brain. Symptoms and signs may present immediately, or evolve over minutes or hours, and commonly resolve within days, but may be prolonged.

No abnormality is seen on standard structural neuroimaging studies (computed tomography or magnetic resonance imaging T1- and T2-weighted images), but in the research setting, abnormalities may be present on functional, blood flow or metabolic imaging studies. Sport-related concussion results in a range of clinical symptoms and signs that may or may not involve loss of consciousness. The clinical symptoms and signs of concussion cannot be explained solely by (but may occur concomitantly with) drug, alcohol, or medication use, other injuries (such as cervical injuries, peripheral vestibular dysfunction) or other comorbidities (such as psychological factors or coexisting medical conditions).

Licensed Healthcare Professional: A physician, physician assistant, osteopath, or certified athletic trainer licensed by the Virginia Board of Medicine; a neuropsychologist licensed by the Board of Psychology; or a nurse practitioner licensed by the Virginia Board of Nursing. (BOE)

Persisting symptoms after concussion: Persisting symptoms after concussion are characterized by the following:

- Symptoms are not improving or are worsening in number and/or severity over days to weeks after injury
- Persisting symptoms may be related to pre-morbid, co-morbid or resulting factors from the injury. These persisting symptoms may be present due to the injury itself but often are due to other biopsychosocial factors as well.
- Symptoms cause distress or disability more days than not
- Symptoms interfere with partial or full return to typical activities such as school, work, sport, and/or social roles
- Consultation with multi-disciplinary brain injury professionals is recommended for Individuals with persisting and disabling symptoms.

Second Impact Syndrome: A poorly understood condition that can occur when a second significant head injury is sustained within hours to days after an initial significant head injury. This can result in rapid and severe brain swelling and catastrophic results.

C. GUIDELINES FOR THE ATHLETIC TRAINER

1. Prior to the start of an athlete's respective sport season, baseline testing will be performed including the Immediate Postconcussion and Cognitive Test battery (ImPACT), the Graded Symptom Checklist (GSC), and at a minimum, the Tandem Gait test (TG). The BESS may also be performed. ImPACT assessments will be reviewed for validity based on the manufacturers' instructions.
2. The AT should assess the injury using the SCAT 5 (see Appendix IV) and follow appropriate guidelines for referral.
3. The AT will notify the student-athlete's parent/guardian and provide at home care instructions.
4. The parent/guardian should provide transportation home and the student-athlete should not be allowed to drive home.
5. If a parent/guardian cannot be reached, the AT should ensure the athlete is in the care of a responsible adult who is capable of monitoring the athlete and understands the home instructions. Efforts to contact the parent/guardian should continue.
6. The AT should notify appropriate school personnel of the athlete's condition, including but not limited to the athlete's coaches and school nurse.
7. Appropriate documentation of the athletes' injury should be maintained by the AT.
8. The AT will administer computerized neurocognitive testing (ImPACT) when the athlete reports being symptom free as a means for monitoring safe progression of return to play. The AT will also perform a post-injury Tandem Gait assessment and Graded Concussion Symptom Checklist when the athlete reports being symptom free. It is expected all student-athletes return to baseline on these measures prior to return to full practice and competition. They should begin light physical activity under the direction of the AT, however, prior to being asymptomatic consistent with active recovery protocols (Appendix III).
9. The AT will consult with appropriate medical personnel if post-injury testing does not return to expected baseline results within two weeks.
 - The AT will provide SCAT 5 assessment, ImPACT baseline and post-injury assessment, Tandem Gait baseline and post-injury assessment, and Graded Concussion Symptom Checklist to appropriate medical personnel upon referral.
10. Upon receipt of appropriate medical clearance, the AT will determine when the student-athlete may return to full physical activity based on successful completion of the sport specific progression program (see Appendix III). If an AT suspects an athlete has not fully recovered despite being medically cleared by another health care provider, he/she may refrain from returning an athlete back to play.

D. GUIDELINES FOR THE SCHOOL NURSE

1. In the event that an athlete presents to the nurse with signs and/or symptoms of a concussion the nurse should assess the injury and determine if a medical emergency is present as described in ACPS Management of a Concussion.
2. If no immediate referral is indicated, the school nurse should contact the AT and release the student athlete to his/her care.
3. Transfer of care will be documented by a release of care form signed by both the school nurse and AT (Appendix V).
4. The nurse will notify the student-athlete's parent/guardian and provide at home care instructions.
5. If a parent/guardian cannot be reached, the nurse should ensure the athlete is in the care of a responsible adult who is capable of monitoring the athlete and understands home instructions. Efforts to contact the parent/guardian should continue.

E. GUIDELINES FOR COACHES AND/OR OTHER RELATED SCHOOL PERSONNEL

1. If the AT is not available at the time of suspected head injury, the coach is responsible for removing the student-athlete from the field of play and notifying the AT of the suspected injury. Any athlete with a suspected concussion should not return to play that day nor until,
 - Evaluated by an appropriate licensed health care provider as determined by the ACPS concussion management team
 - Written clearance has been received from such licensed health care provider.
2. In the absence of an AT the coach should notify and report all signs and symptoms of the injury, as well as all knowledge of the mechanism of injury to the AT.
3. If an athlete requires immediate referral to higher level of care (refer to "red flags" above), EMS should be activated (refer to the Incident Action Plan for specific field details), parent/guardian should be contacted, and the designated coach should accompany the athlete to the hospital.
4. If immediate referral is not suggested (refer to ACPS Management of a Concussion) the coach is responsible for notifying the parent/guardian of the injury.
5. The parent/guardian should provide transportation home and the student-athlete should not be allowed to drive home.
6. If a parent/guardian cannot be reached, the coach should ensure the athlete is in the care of a responsible adult who is capable of monitoring the athlete and understands the home instructions. Efforts to contact the parent/guardian should continue.

F. EDUCATION

ACPS will require that school nurses, coaches, athletic trainers, and licensed health care provider volunteers receive current training annually on the following:

- Recognizing the signs and symptoms of a concussion
- Strategies to reduce the risks of concussions
- How to seek proper medical treatment for a student-athlete suspected of having a concussion
- When and how the student should return to academic activities (strategies for academic accommodations if needed)
- When and how a student-athlete may safely return to physical activities

1. Parents/Guardians

In order to participate in any extracurricular athletic activity, ACPS will require student-athletes and their parents/guardians to review information on concussions on an annual basis (every 12 months). This information will include a parent and student-athlete fact sheet along with watching a concussion video provided on the school's athletic website. After having reviewed the materials each student-athlete and the student-athlete's parent or guardian shall sign a statement acknowledging receipt, review, and understanding of such information. (Appendix I)

By signing this form, the student-athlete and the student-athlete's parent or guardian will accept the responsibility for reporting injuries and illnesses, including signs and symptoms of a concussion, to the coaching staff, school nurse, and school athletic trainer.

In order to participate in any extracurricular athletic activity listed in Table 1 below, ACPS will require the student-athlete to take a baseline neurocognitive test (ImPACT) and postural stability testing (Tandem Gait) within 10 days of team selection. Any student who participates in a sport not listed in Table 1 may opt to take the ImPACT test and Tandem Gait test (Appendix V).

Figure 1

SPORTS WITH HIGH RISK FOR CONCUSSION	
Baseball	Football
Basketball	Lacrosse
Cheerleading	Soccer
Color Guard	Softball
Diving	Swimming
Field Events (shot put, discus, high jump, triple jump, long jump, pole vault)	Volleyball
Field Hockey	Wrestling

2. Coaches

All coaches will be required to complete the online Concussion in Sports course provided by the National Federation of High Schools. This course is to be completed on an annual basis by head and assistant coaches within the first week of practice of their respective sport. Information including signs and symptoms of concussions, effects of a concussion on the student-athlete, ACPS Sports Concussion Management Plan, and return to activity protocol for their respective sport will be included in each coach’s handbook.

3. Administrators and Faculty

All ACPS faculty and staff will be required to review annually signs and symptoms associated with concussions, effects of a concussion on a student-athlete’s cognitive and academic performance (Appendix II), and ACPS Sports Concussion Management Plan.

4. Volunteers

All volunteers will be required to annually review ACPS Sports Concussion Management Plan, School Board Policy, and CDC Heads Up: Concussion in High School Sports.

5. Certified Athletic Trainers (AT)

ACPS AT’s will be required to annually review ACPS Sports Concussion Management Plan and School Board Policy. Each AT will also annually complete a one hour in-service on sports concussion evaluation and management. The AT is responsible for maintaining current knowledge of concussion assessment and management.

6. Team Physicians

Team Physicians will be required to annually review ACPS Concussion Management Plan. Physicians must be able to certify that they are aware of the current medical guidance on concussion evaluation and management. Appropriate evidence includes recent continuing education specific to sport concussion management and evaluation.

G. ACPS MANAGEMENT OF A CONCUSSION

Each student-athlete will react differently to a concussion; therefore, each student-athlete should be treated with individual care. The following situations indicate a medical emergency and require activation of the Emergency Medical System:

- Any athlete who has symptoms of a concussion and who is not stable (condition is worsening).
- Any athlete who exhibits any of the following “red flags” (signs or symptoms):
 - Decreasing level of consciousness
 - Increasing confusion
 - Increasing irritability
 - Weakness or numbness/tingling in the arms or legs
 - Pupils becoming unequal in size
 - Repeated vomiting
 - Seizures
 - Slurred speech or inability to speak
 - Inability to recognize people or places
 - Worsening confusion
 - Severe or rapidly worsening headache
 - Persisting double vision
 - Severe neck pain
 - bruising behind ear(s)
 - bruising around eye(s)
- The following are symptoms associated with a concussion, but are NOT red flags:
 - Headache
 - Nausea
 - Dizziness
 - Blurred vision
 - Feeling eye strain
 - Balance problems
 - Sensitivity to light
 - Sensitivity to noise
 - Feeling slowed down
 - Feeling like “in a fog”
 - Difficulty concentrating
 - Difficulty remembering
 - Fatigue or low energy
 - Mild, temporary confusion
 - disorientation
 - Drowsiness
 - More emotional
 - Irritability
 - Sadness
 - Nervous or Anxious
 - Trouble falling asleep
 - Needing more sleep

When a student-athlete sustains a concussion, or is suspected by the athletic trainer, coach or school nurse of having a concussion, the management plan below will be followed.

1. Evaluated by an Athletic Trainer with SCAT 5 (Sideline Concussion Assessment Tool) at the time of the injury.
2. If an AT is not available, the coach will remove the student-athlete from the game or practice. The coach will contact the parent/guardian and refer the student-athlete to a physician who can certify that he or she is current on medical guidance of concussion evaluation and management. The coach will also notify the AT of the situation.
3. The student-athlete MUST be evaluated by a licensed healthcare professional that can certify that he/she is aware of the current medical guidance on concussion evaluation and management before returning to play.
4. All student-athletes seen by a physician must bring written documentation of medical clearance from the physician to the AT, releasing them to the care of the AT prior to starting the Gradual Return to Sports Participation Program (Appendix III).
5. Following injury a short rest period is recommended (less than 48 hours) based on an athlete’s symptom burden. Athletes should be encouraged to participate in regular activities of daily living as long as symptoms are not exacerbated. Once an athlete has successfully begun a gradual return to academics, a stepwise return to activity progression can be initiated.
6. All student-athletes must follow a Gradual Return to Sports Participation Program prior to returning to full participation (Appendix III).
7. If the student-athlete develops concussion-related signs or symptoms during the Gradual Return to Learn/Return to Play Participation Program, he or she should return to the previous level of academic and physical activity. If this pattern of intolerance to progression still continues two to three weeks post-injury, the student should be re-evaluated by a healthcare professional with specialty training in concussion diagnosis and management (i.e. neurologist, neuropsychologist, or physical therapist.)

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APPENDICES



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Concussion Information for Parents

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Sport Concussion Assessment Tool – 5th Edition (SCAT5)

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On-Campus Transfer of Care

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Home Care Instructions for Concussion Handout

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Licensed Medical Professional Clearance Form

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APPENDIX I



Concussion Information for Parents What is a Concussion?

A concussion is a brain injury which results in a temporary disruption of normal brain function. A concussion can be caused by a bump, blow, or jolt to the head or body. Even what seems to be a mild bump to the head can be serious. A student-athlete does not have to lose consciousness to suffer a concussion. A concussion may cause multiple symptoms. Many symptoms appear immediately following the injury, while others may develop over the next several hours to days. The symptoms may be subtle and are often difficult to fully recognize.

Signs and Symptoms of a Concussion				
Physical		Cognitive	Emotional	Sleep Patterns
Headache	Blurry or double vision	Feeling mentally "foggy"	Sadness	Excessive drowsiness
Nausea or vomiting	Fatigue	Feeling slowed down	Nervousness	Sleeping more than usual
Dizziness	Sensitivity to light	Difficulty remembering	Irritability	Sleeping less than usual
Instability/off balance	Lightheadedness	Difficulty concentrating	More emotional	Trouble falling asleep

Question: What should I do in the first 24-36 hours?

Answer:

- Your student-athlete should not be left alone for extended periods of time. Consider: Your child will likely be feeling tired, headachy, maybe dizzy, maybe nauseated, and just not well for the first day or so. It is important that a responsible adult be easily available in case extra help and support is needed. Either remain close by or readily accessible by phone/text. The first night after injury, check on your child once or twice. Sleep is important for recovery and you do NOT need to wake him/her up during the night unless you are concerned about the way she/he is breathing.
- Your student-athlete should not drive while still having significant concussion symptoms.
- It is OK to use an ice pack or warm compress on the head and neck for comfort. It also is OK to use Tylenol to help with pain control. Avoid ibuprofen or Aleve for the first 24 hours, but those are OK to use after the first 24 hours. Children and adolescents should not take aspirin containing products, including Excedrin, without consulting a physician.
- Create an environment free of excessive noise (e.g. loud music or televisions) that may worsen the student-athlete's symptoms.
- Ensure the injured student-athlete eats a normal healthy diet and maintains hydration. Ensure they drink water throughout the day so that urine is light yellow.

Question: When should I take my child to the doctor?

Answer:

All student-athletes who sustain a concussion need to be evaluated by a licensed healthcare professional who is familiar with sports concussion diagnosis and management. You should call their physician and explain what has happened. A follow-up appointment should be scheduled with the primary care doctor or a sports concussion specialist if directed.

If any signs or symptoms significantly worsen (“red flags”), especially if they worsen quickly, then proceed **IMMEDIATELY** to the nearest emergency medical facility. Additional symptoms to watch for that would require **IMMEDIATE MEDICAL ATTENTION** includes:

- Decreasing level of consciousness
- Increasing confusion
- Increasing irritability
- Weakness or numbness in the arms or legs
- Eye pupils becoming unequal in size
- Repeated vomiting
- Seizures
- Slurred speech or inability to speak
- Inability to recognize people or places
- Severe or rapidly worsening headache
- Persisting double vision
- Severe neck pain
- Worsening confusion
- bruising behind ears

Question: How can a concussion affect school work?

Answer:

Following a concussion, many student-athletes will have some temporary difficulty in school. These problems may last for days or a few weeks and often include difficulties with short- term memory, concentration, and organization.

In many cases it is best to lessen the student-athlete’s class load early on after the injury. This may include staying home from school for a few days then a lightened schedule for a few additional days. It is possible that a longer period of time may be needed. Decreasing the cognitive and emotional stress on the brain early on after a concussion is important and may lessen symptoms and shorten recovery time. It is important, however, not to keep students out of school for an extended period of time. See Appendix II for specific academic accommodations. In general, RETURN TO LEARN happens before full return to their sport. Light physical activity, as permitted by an athletic trainer or health care provider, may occur 48-72 hours after the injury diagnosis.

Question: When can a student-athlete return to play following a concussion?

Answer:

A student-athlete should not return to play or practice on that same day as the injury. Studies have shown that a young brain does not recover quickly enough for a student-athlete to return to activity in such a short time. Your student-athlete should not participate in any high-risk activities which may lead to head injury. This includes physical education class, recess, and riding a bike or skateboard until they have been cleared to do so by a licensed healthcare professional.

Following injury, a short rest period is recommended (<48 h) based on an athlete’s symptom burden. Athletes should be encouraged to participate in regular activities of daily living as long as symptoms are not exacerbated. The student-athlete may continue to gradually re-integrate into daily activities and begin an academic return progression. Once an athlete has successfully initiated a return to academics, they should also begin a gradual return to physical activity (See Gradual Return to Sports Participation-Appendix III).

Question: Why is it so important that student-athletes not return to play until they have completely recovered from a concussion?

Answer:

A second concussion that occurs before the brain recovers from the first can slow recovery or increase the chances of long-term problems. In rare cases of two injuries occurring within the same very short period of time (24-48 hours), brain swelling can result, leading to permanent brain damage or even death. This is known as second impact syndrome. This rare but severe possibility is why no student-athlete is allowed to return to play on the day of injury. If concussions are separated by two to three weeks, the results are unlikely to be 'catastrophic,' but total recovery time is expected to be more prolonged.

Question: What is the best treatment to help my student-athlete recover more quickly from concussion?

Answer:

The best immediate treatment for a concussion is brief rest, both physically and mentally. There are no medications that can speed the recovery from a concussion. After the initial rest period a symptom-limited gradual return to daily activities is important ("active recovery"). Exposure to loud noises, bright lights, chaotic environments, and/or stressful situations may worsen the symptoms of a concussion. As the symptoms decrease, exposure to more typical environments and activities may be gradually re-introduced.

Question: How long do the symptoms of a concussion typically last?

Answer:

The symptoms of a concussion will usually start to go away within 14 days of the initial injury. In some cases, symptoms may last for several weeks. Students with pre-existing headaches/ migraines, ADHD, anxiety, depression, sleep problems may see a particular increase in these symptoms and they may linger longer than for someone who does not have those conditions at baseline.

Q: Is a CT scan or MRI needed to diagnose a concussion?

Answer:

Diagnostic testing, including CT and MRI scans are rarely needed following a concussion. While these are helpful in identifying life-threatening brain injuries, like bleeding in the brain, a concussion does not "show up" on standard CT or MRI. The Centers for Disease Control (CDC) does not recommend routine use of head CT for concussion. Concussions are diagnosed based on the student-athlete's description of the injury or event, the student-athlete's reported symptoms, and the licensed healthcare provider's physical examination.

Q: When should the student-athlete see a sports concussion specialist?

Answer:

Any student-athlete who has had significant or recurrent head injuries or whose symptoms persist beyond 10-14 days may benefit from an evaluation completed by their primary health care provider. Your child's physician may also recommend a specialty evaluation if they have any concerns or need further assistance with the student-athlete's concussion management. A student-athlete with persistent symptoms may benefit from continued care by a physical therapist trained in concussion treatment. Neuropsychological testing, can be helpful to assist with return to academic and physical activity in the event of a prolonged recovery (2010 AAP Sport-Related Concussion in Children and Adolescents).

*Some of this information has been adapted from the CDC's "Head's Up: Concussion in High School Sports" and the NFHS's Sports Medicine Advisory Committee. Please visit [cdc.gov](https://www.cdc.gov) for more information.

ACKNOWLEDGMENT OF ACPS CONCUSSION MANAGEMENT PLAN

Please complete and return this form to your student-athlete's coach.

I, _____ parent/guardian of, _____ have received, reviewed, and understand the information on concussions. I agree to work in coordination with the coaches, teachers, certified Athletic Trainers, and administrators of Albemarle County Public Schools in order to provide a safe environment for my child as well as all athletes at the school.

Signature of Parent/Guardian

Date

Printed Name of Parent/Guardian

Printed Name of Student-Athlete

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APPENDIX II – RETURN-TO-LEARN



Step	Mental Activity	Activity at Each Step	Goal
1	Daily activities that do not result in more than a mild exacerbation* of symptoms related to the current concussion.	Typical activities during the day (eg. reading) while minimizing screen time. Start with 5 to 15 minutes at a time and increase gradually.	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 schoolwork. May need to start with partial school day or with greater access to rest breaks during the day.	Increase academic activities.
4	Return to school full time	Gradually progress in school activities until a full day can be tolerated without more than mild* symptom exacerbation.	Return to full academic activities and catch up on missed work.

Following an initial period of relative rest (24-48 hours following an injury at Step 1), athletes can begin a gradual and incremental increase in their cognitive load. Progression through the strategy for students should be slowed when there is more than a mild and brief symptom exacerbation.

*Mild and brief exacerbation of symptoms is defined as an increase of no more than 2 points on a 0-10 point scale (with 0 representing no symptoms and 10 the worst symptoms imaginable) for less than an hour when compared with the baseline value reported prior to cognitive activity.

¹ Patriccios J, Schneider K, Dvorak J, et al. Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport – Amsterdam, October 2022. Br J Sports Med 2023 <https://doi.org/10.1136/bjsports-2023-106898>

Concussion Signs and Symptoms and Academic Accommodations

Classroom Behavioral Changes

- Poor attention and concentration
- Irritability and low frustration tolerance
- Differences in following directions and/or answering questions
- Reduced short term memory recall
- Delayed processing
- Easily distracted
- Inability to follow through with routing assignments
- Disproportional reaction to situations
- Repeating themselves
- Sensitivity to light and/or noise

Classroom Accommodations

- **Information Processing**
 - Increased time to complete assignments
 - Breakdown complex directions
 - Decrease length of assignments
 - Teacher/peer notes if and when possible
 - Priority seating to optimize processing
- **Memory Deficits**
 - Written and verbal instructions
 - Posted schedule and directions
 - Frequent review of information
- **Attention Deficits**
 - Visual prompts
 - Frequent breaks
 - Preferential seating
- **Organizational Skills**
 - Study guide and/or timeline of information
 - Provision of color coded materials
 - Daily calendar for assignments and tasks
 - Meeting with a resource teacher to review study plan (if available)
- **Eye Strain**
 - Dim lights if photosensitive
 - Limit screen time (computers, projections, "smart boards")
 - Paper/pencil option if needed
 - Allow student to wear visor or sunglasses
 - Auditory means of learning
 - For students using on-line learning, A-synchronous learning and use of audio instruction is ideal.
- **Fatigue**
 - Shortened school day
 - Rest periods during school day

ACPS Concussion Return to Learn Guidelines

	SYMPTOMS	TEACHER EXPECTATIONS & RECOMMENDATIONS	PARENT RECOMMENDATIONS
BLACK (Recovery Stage 1)	Student reports symptoms that interfere with activities or daily living	<ul style="list-style-type: none"> No school attendance No homework or make-up completed No communication to teachers expected from student 	<ul style="list-style-type: none"> Rest at home as much as possible Minimize bright screen usage, ie: computers, TV, iPad, video game, phones. No homework No extra physical activity Maintain contact in some way with peers No driving Minimal physical activity
RED (Recovery Stage 2)	Student reports symptoms are not yet fully controlled with activity modification	<ul style="list-style-type: none"> No school attendance Start trying short amounts of cognitive activity as symptoms allow (especially talking to friends about school, listening to podcasts or class notes, try short periods of reading) Sustained cognitive exertion of up to 30 minutes, but no prolonged concentration Goal is to assess for school-readiness is being able to work for 20-30 minutes without significant exacerbation of symptoms (and then take 20-30 min break) Minimal communication to teachers expected from student 	<ul style="list-style-type: none"> Rest at home Activities are based on symptom level Can do short walks, stretching, yoga as tolerated If symptom-free, can begin trying academics at 10-20 minute intervals Try short “field trips” outside the home such as to the store, to help assess/ prepare for readiness to return to school environment Have some structure to days to help maintain normalcy and protect good sleep-wake cycles No driving
ORANGE (Recovery Stage 3)	Student reports that he/she has minimal symptoms and student can do academic work without symptom-exacerbation for at least 20-30 minutes	<ul style="list-style-type: none"> Student can begin partial school days with accommodations* Student may need to complete classwork in shortened intervals while in class* *Amount of class periods and interval lengths will be specified by AT Notes may need to be provided Homework and make-up work will be completed on an “as-tolerated” basis, but is not expected to be fully completed As lesson academics allow, assignments should minimize “busy work” and focus on the most essential course requirements Student is expected to leave the classroom for a 20 minute break if symptoms occur No quizzes or tests May need extra time to complete assignments or modified assignments May need modified environment such as limiting time in hallway, identifying quiet and/or dark spaces 	<ul style="list-style-type: none"> No parties, concerts, sleepovers or activities that may be noisy, stressful or may interfere with sleep But important to maintain contact with peers Do homework in short intervals of 20 min work/20 min break & slowly increase (per AT recommendations) Computer usage and phone usage can be allowed if it doesn’t create symptoms Increasing amounts of gentle physical activity as a break from sitting around; to help with relaxation and stress reduction and to help maintain good sleep-wake hygiene

**Chart continues on next page*

ACPS Concussion Return to Learn Guidelines

	SYMPTOMS	TEACHER EXPECTATIONS & RECOMMENDATIONS	PARENT RECOMMENDATIONS
YELLOW (Recovery Stage 4)	Student can control symptoms with activity modification and student can sit through a full class without symptom exacerbation while being mentally engaged	<ul style="list-style-type: none"> ▪ Student can complete full school days with few accommodations ▪ Homework & classwork is expected to be attempted, but will be completed on an “as-tolerated” basis ▪ Student is allowed to leave the classroom for 10 minutes if symptoms occur ▪ Student is expected to be engaged when in the classroom ▪ Quizzes allowed but no lengthy tests or modified testing ▪ Student should be starting gradual return to play protocol and may be up to trying some sport-specific drills but still no contact and taking breaks and backing down if symptoms are exacerbated 	<ul style="list-style-type: none"> ▪ Avoid activities that increase symptoms ▪ No activities that interfere with a full night’s rest ▪ Homework is to be completed in intervals no longer than 45 min work/ 15 min break ▪ Increase physical activity as recommended by AT ▪ Try to adopt a normal routine
GREEN (Recovery Stage 5)	Student is symptom-free for a full day of school without accommodations and passes ImPACT Test or deemed clinically recovered by AT	<ul style="list-style-type: none"> ▪ Student can complete full school days without accommodations ▪ Student is expected to be fully engaged ▪ Homework is expected to be completed ▪ Make-up work and projects will be completed with reasonable due dates ▪ Quizzes and tests allowed ▪ Student may still benefit from some extra time for lengthy tests (5-10 minute break every 45 minutes of testing for example) ▪ May need continuation of instructional modification and support in academically challenging subjects that require cognitive overexertion and stress 	<ul style="list-style-type: none"> ▪ No restrictions at home ▪ Continue working with AT to progress through full return to practice and games (must complete 5-day Return to Play progression under AT supervision)

2022-23 ACPS CONCUSSION MANAGEMENT PLAN

APPENDIX III



Gradual Return to Sport Participation Following a Concussion

After a student-athlete has sustained a concussion, a 24-48 hour rest period is observed after which an athlete may gradually re-integrate into limited daily activities and gradual return to academics (see Return to Learn guidelines). If an activity increases the student-athlete's symptoms the activity should be stopped immediately and they should return to the earlier stage the following day. Once an athlete has successfully started a gradual return to academics, a gradual return to physical activity can be made at the same time. Prior to an athlete returning to full participation in sport, she or he must have fully resumed full academic participation, must receive written medical clearance from a licensed health-care professional, and returned to his/her baseline on IMPACT, BESS, and Graded Concussion Symptom Checklist. Each step of the process must be supervised by a coach and the school AT.

Football and Men's Lacrosse Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in a helmet and shorts practice with no contact
Stage 4: Non-Contact Sport Specific Drills	May participate in agility drills to include stickwork or passing drills with no contact
Stage 5: Full Contact Practice	May participate in full practice with pads
Stage 6: Return to Normal Game Play*	

Field Hockey and Women's Lacrosse Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in individual stick drills and increased endurance activities
Stage 4: Non-Contact Sport Specific Drills	May participate in team agility drills to include stickwork with no contact
Stage 5: Full Contact Practice	May participate in full practice
Stage 6: Return to Normal Game Play*	

Basketball Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in individual drills and increased endurance activities
Stage 4: Non-Contact Sport Specific Drills	May participate in team agility drills to include dribbling, passing, and shooting drills with no contact
Stage 5: Full Contact Practice	May participate in full practice
Stage 6: Return to Normal Game Play*	

Wrestling Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in individual practice to include increased endurance activities
Stage 4: Non-Contact Sport Specific Drills	May participate in light partner drills excluding live drills
Stage 5: Full Contact Practice	May participate in full practice to include live drills
Stage 6: Return to Normal Game Play*	

Baseball and Softball Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, throw and catch, hitting from tee
Stage 3: Moderate Physical Exertion	May participate in fielding drills
Stage 4: Non-Contact Sport Specific Drills	May participate in batting practice and base running
Stage 5: Full Contact Practice	May participate in full practice
Stage 6: Return to Normal Game Play*	

Volleyball Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in individual agility, serving, and setting the ball
Stage 4: Non-Contact Sport Specific Drills	May participate in team agility drills with no scrimmage or game type play
Stage 5: Full Contact Practice	May participate in full practice
Stage 6: Return to Normal Game Play*	

Soccer Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in individual agility and shooting drills
Stage 4: Non-Contact Sport Specific Drills	May participate in team drills with no scrimmage or game type play
Stage 5: Full Contact Practice	May participate in full practice
Stage 6: Return to Normal Game Play*	

Cheerleading Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	Low levels of walking, jogging, or stationary bike
Stage 3: Moderate Physical Exertion	May participate in walk-through cheers with no tumbling, stunts or jumps
Stage 4: Non-Contact Sport Specific Drills	May participate in tumbling and jumps
Stage 5: Full Contact Practice	May participate in full practice to include stunts
Stage 6: Return to Normal Game Play*	

Track and Field Return to Play Criteria

STAGE OF REHABILITATION	FUNCTIONAL EXERCISE
Stage 1: Gradual Reintroduction	Gradual progression of daily/work activities that does not provoke symptoms
Stage 2: Light Physical Exertion	AT specific guidelines
Stage 3: Moderate Physical Exertion	AT specific guidelines
Stage 4: Non-Contact Sport Specific Drills	AT specific guidelines
Stage 5: Full Contact Practice	AT specific guidelines
Stage 6: Return to Normal Game Play*	

*An additional day of full contact practice may be added if deemed necessary by the Athletic Trainer. This may be necessary depending on the sport to which the student-athlete is returning, practice status, previous concussion history, and severity of symptoms over the course of healing.

**Specific stage progression and stage delineation is at the discretion of the Athletic Trainer. There should be at least 24 hours (or longer) for each step of the progression. If any symptoms worsen during exercise, the athlete will go back to the previous stage. Resistance training should be added only in the later stages (stage 3 or 4 at the earliest). If symptoms are persistent (eg, more than 10-14 days) the athlete should be referred to a healthcare professional who is an expert in concussion for further evaluation and management.

2022-23 ACPS CONCUSSION MANAGEMENT PLAN

APPENDIX IV



A copy of the Sport Concussion Assessment Tool — 5th Edition (SCAT5) is included on pages 20 through 27 for your convenience.

SCAT5[®]

SPORT CONCUSSION ASSESSMENT TOOL – 5TH EDITION

DEVELOPED BY THE CONCUSSION IN SPORT GROUP
FOR USE BY MEDICAL PROFESSIONALS ONLY

supported by



FIFA[®]



FEI

Patient details

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date of Injury: _____ Time: _____

WHAT IS THE SCAT5?

The SCAT5 is a standardized tool for evaluating concussions designed for use by physicians and licensed healthcare professionals¹. The SCAT5 cannot be performed correctly in less than 10 minutes.

If you are not a physician or licensed healthcare professional, please use the Concussion Recognition Tool 5 (CRT5). The SCAT5 is to be used for evaluating athletes aged 13 years and older. For children aged 12 years or younger, please use the Child SCAT5.

Preseason SCAT5 baseline testing can be useful for interpreting post-injury test scores, but is not required for that purpose. Detailed instructions for use of the SCAT5 are provided on page 7. Please read through these instructions carefully before testing the athlete. Brief verbal instructions for each test are given in italics. The only equipment required for the tester is a watch or timer.

This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. It should not be altered in any way, re-branded or sold for commercial gain. Any revision, translation or reproduction in a digital form requires specific approval by the Concussion in Sport Group.

Recognise and Remove

A head impact by either a direct blow or indirect transmission of force can be associated with a serious and potentially fatal brain injury. If there are significant concerns, including any of the red flags listed in Box 1, then activation of emergency procedures and urgent transport to the nearest hospital should be arranged.

Key points

- Any athlete with suspected concussion should be REMOVED FROM PLAY, medically assessed and monitored for deterioration. No athlete diagnosed with concussion should be returned to play on the day of injury.
- If an athlete is suspected of having a concussion and medical personnel are not immediately available, the athlete should be referred to a medical facility for urgent assessment.
- Athletes with suspected concussion should not drink alcohol, use recreational drugs and should not drive a motor vehicle until cleared to do so by a medical professional.
- Concussion signs and symptoms evolve over time and it is important to consider repeat evaluation in the assessment of concussion.
- The diagnosis of a concussion is a clinical judgment, made by a medical professional. The SCAT5 should NOT be used by itself to make, or exclude, the diagnosis of concussion. An athlete may have a concussion even if their SCAT5 is "normal".

Remember:

- The basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Do not attempt to move the athlete (other than that required for airway management) unless trained to do so.
- Assessment for a spinal cord injury is a critical part of the initial on-field assessment.
- Do not remove a helmet or any other equipment unless trained to do so safely.

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

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

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

	Yes	No
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: _____

2

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)⁴

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	of 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						of 15		
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						of 30		
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:					of 4

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	of 1	
Concentration Total Score (Digits + Months)	of 5	

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

Domain	Date & time of assessment:		
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.

CLINICAL NOTES:

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



CONCUSSION INJURY ADVICE

(To be given to the person monitoring the concussed athlete)

This patient has received an injury to the head. A careful medical examination has been carried out and no sign of any serious complications has been found. Recovery time is variable across individuals and the patient will need monitoring for a further period by a responsible adult. Your treating physician will provide guidance as to this timeframe.

If you notice any change in behaviour, vomiting, worsening headache, double vision or excessive drowsiness, please telephone your doctor or the nearest hospital emergency department immediately.

Other important points:

Initial rest: Limit physical activity to routine daily activities (avoid exercise, training, sports) and limit activities such as school, work, and screen time to a level that does not worsen symptoms.

- 1) Avoid alcohol
- 2) Avoid prescription or non-prescription drugs without medical supervision. Specifically:
 - a) Avoid sleeping tablets
 - b) Do not use aspirin, anti-inflammatory medication or stronger pain medications such as narcotics
- 3) Do not drive until cleared by a healthcare professional.
- 4) Return to play/sport requires clearance by a healthcare professional.

Clinic phone number: _____

Patient's name: _____

Date / time of injury: _____

Date / time of medical review: _____

Healthcare Provider: _____

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Contact details or stamp

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

- 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)
- Maddocks, DL; Dicker, GD; Saling, MM. The assessment of orientation following concussion in athletes. Clinical Journal of Sport Medicine 1995; 5: 32-33
- Jennett, B, Bond, M. Assessment of outcome after severe brain damage: a practical scale. Lancet 1975; i: 480-484
- McCrea M. Standardized mental status testing of acute concussion. Clinical Journal of Sport Medicine. 2001; 11: 176-181
- 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
- Drowsiness or inability to be awakened
- Inability to recognize people or places
- Repeated vomiting
- Unusual behaviour or confusion or irritable
- Seizures (arms and legs jerk uncontrollably)
- Weakness or numbness in arms or legs
- Unsteadiness on their feet.
- 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
- More time to finish assignments/tests
- Quiet room to finish assignments/tests
- Not going to noisy areas like the cafeteria, assembly halls, sporting events, music class, shop class, etc.
- Taking lots of breaks during class, homework, tests
- No more than one exam/day
- Shorter assignments
- 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.

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APPENDIX V



Timed Tandem Gait Guidelines

Athletes are instructed to stand with their feet together behind a starting line (the test is best done with footwear removed). However, if footwear is worn, be consistent with how the test is administered prior to and following injury. Then, the athlete is instructed to walk in a forward direction as quickly and as accurately as possible along a 38mm wide (sports tape), 3 meter line (9' 8") 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.^[1, 2]



A total of 4 trials are done and the best time is retained. Athletes should complete the test in 14 seconds. 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.
- Exceed 14 seconds (in the absence of a baseline assessment).
 - It is possible an athlete may take more than 14 seconds to complete the tandem gait test. In the absence of a baseline assessment, the results of the tandem gait test should be considered in conjunction with all remaining clinical measures and the clinical examination.

References

1. Oldham, J.R., et al., No differences in tandem gait performance between male and female athletes acutely post-concussion. *J Sci Med Sport*, 2020. 23(9): p. 814-819.
2. Oldham, J.R., et al., Efficacy of Tandem Gait to Identify Impaired Postural Control after Concussion. *Med Sci Sports Exerc*, 2018. 50(6): p. 1162-1168.

2022-23 ACPS CONCUSSION MANAGEMENT PLAN

APPENDIX VI



A copy of the Balance Error Scoring System (BESS) is included on page 29 for your convenience.

The Balance Error Scoring System (BESS)

Obtain Preseason Baseline Score; Compare with Post-Concussion Score³³⁻³⁴

The Balance Error Scoring System³³⁻³⁴ provides a portable, cost-effective and objective method of assessing static **postural stability**. The BESS can be used to assess the effects of mild head injury on static postural stability. Information obtained from this clinical balance tool can be used to assist clinicians in making return to play decisions following mild head injury. The BESS can be performed in nearly any environment and takes approximately 10 minutes to conduct.

The balance-testing regime consists three stances on two different surfaces. The three stances are **double leg stance**, **single leg stance** and **tandem stance**. The two different surfaces include both a **firm** (ground) and **foam** surface. **Athletes' stance should consist of the hands on the iliac crests, eyes closed and a consistent foot position depending on the stance.** Shoes should not be worn.

In the **double leg stance**, the feet are flat on the testing surface approximately pelvic width apart.

In the **single leg stance** position, the athlete is to stand on the non-dominant leg with the contralateral limb held in approximately 20° of hip flexion, 45° of knee flexion and neutral position in the frontal plane.

In the **tandem stance** testing position, one foot is placed in front of the other with heel of the anterior foot touching the toe of the posterior foot. The athlete's non-dominant leg is in the posterior position. Leg dominance should be determined by the athlete's kicking preference.

Administering the BESS: Establish baseline score prior to the start of the athletic season. After a concussive injury, re-assess the athlete and compare to baseline score. Only consider return to activity if scores are comparable to baseline score. Use with Standardized Symptom Scale Checklist.

Scoring the BESS: Each of the trials is **20 seconds**. Count the number of errors (deviations) from the proper stance. The examiner should begin counting errors only after the individual has assumed the proper testing position.



Double Leg Stance
Firm Surface



Single Leg Stance
Firm Surface



Tandem Stance
Firm Surface



Double Leg Stance
Foam Surface



Single Leg Stance
Foam Surface



Tandem Stance
Foam Surface

Errors:

- Moving the hands off the hips
- Opening the eyes
- Step, stumble or fall
- Abduction or flexion of the hip beyond 30°
- Lifting the forefoot or heel off of the testing surface
- Remaining out of the proper testing position for greater than 5 seconds

The maximum total number of errors for any single condition is 10.

If a subject commits multiple errors simultaneously, only one error is recorded.

B.E.S.S. SCORECARD

Count Number of Errors max of 10 each stance/surface	FIRM Surface	FOAM Surface
Double Leg Stance (feet together)		
Single Leg Stance (non-dominant foot)		
Tandem Stance (non-dominant foot in back)		
TOTAL SCORES: total each column		
B.E.S.S. TOTAL: (Firm+Foam total)		

2022-23 ACPS CONCUSSION MANAGEMENT PLAN

APPENDIX VII, VIII, AND IX



Appendix VII includes a copy of the On-Campus Transfer of Care form on page 33.

Appendix VIII includes a copy of the Home Care Instructions for Concussion handout on page 34.

Appendix IX includes a copy of the Licensed Medical Professional Clearance form on page 35.

See page 36 for an infographic on Concussion Management.

HOME CARE INSTRUCTIONS FOR CONCUSSION

Athlete _____ Date of Injury _____ Sport _____

Phone Number _____ Parent/Guardian Name _____

While participating in athletics your son/daughter sustained a head injury that appears to be a concussion or mild brain injury. Your student-athlete's safety is our main priority and s/he will not be able to return to activity until cleared by a licensed medical professional who can certify s/he is aware of the current medical guidance on concussion evaluation and management. Your student-athlete must complete the ACPS supervised Gradual Return to Sports Participation Program prior to being allowed to compete.

In some instances, the signs of a concussion do not become obvious until several hours or even a day after the injury. Headaches, nausea, dizziness, mental fogginess, fatigue, mood changes, etc., may even be a little bit worse the day after injury.

Each person recovers from a concussion a little differently. However, the following signs/ symptoms are "red flags" that should alert you to seek immediate medical attention (go to the ER):

- Decreasing level of consciousness
- Increasing confusion
- Increasing irritability
- Weakness or numbness in the arms or legs
- Eye pupils becoming unequal in size
- Repeated vomiting
- Seizures
- Slurred speech or inability to speak
- Inability to recognize people or places
- Worsening confusion
- Severe or rapidly worsening headache
- Persisting double vision
- Severe neck pain

The following are symptoms associated with a concussion, but are NOT red flags:

- Headache
- Nausea
- Dizziness
- Blurred vision
- Feeling eye strain
- Balance problems
- Sensitivity to light
- Sensitivity to noise
- Feeling slowed down
- Feeling like "in a fog"
- Difficulty concentrating
- Difficulty remembering
- Fatigue or low energy
- Confusion
- Drowsiness
- More emotional
- Irritability
- Sadness
- Nervous or Anxious
- Trouble falling asleep
- Needing more sleep

Please follow these instructions for home care:

It is OK for your child to:

- Use an ice or heat pack for head and neck comfort
- Eat a normal diet and stay well hydrated
- Go to sleep or rest
- Take all currently prescribed prescription medications (including those for ADHD, migraines, depression, anxiety, etc)

Your child SHOULD NOT:

- Check eyes with flashlight
- Wake up every hour
- Drink alcohol
- Drive if symptomatic
- Strenuously exercise

Please remind your child to check in with the Athletic Trainer prior to practice/event on the first day he/she returns to school.

Athletic Trainer _____ Phone _____ Email _____

Recommendations Provided By _____ Date _____

Licensed Medical Professional Clearance Form

I, _____ certify that to the best of my knowledge, I am aware of the current medical guidance on concussion evaluation and management. I have evaluated the student-athlete's symptoms and release them to the care of the Athletic Trainer for monitoring of return-to-play procedures.

Licensed Health Care Provider Signature

Date

Licensed Health Care Provider Printed Name

Phone Number

