2017-18

Department of Athletics & Recreation
NCAA SSI REVIEWED: June 23, 2017
FINAL – JULY 1, 2017

[CONCUSSION MANAGEMENT PLAN]

Policy Statement: This document outlines guidelines to aid in the management of concussions and safe return-to-play for student-athletes at Bucknell University. This is a multifaceted approach to concussion management. The information included in this protocol and the tools referenced are to be taken into consideration on an individual case-by-case basis. Modifications may be implemented as deemed appropriate by Bucknell Team Physicians and Athletic Training Staff.

PURPOSE

To develop a concussion management procedure in accordance with NCAA bylaw 3.2.4.17 (Concussion Management Plan) that creates a consistent and objective method for the recognition, evaluation, and management of student-athletes who have sustained a concussion, in keeping with the National Athletic Trainers' Association Position Statement on Management of Sport-Related Concussion.
Specifically, to:

a) Ensure proper diagnosis and management of concussions;
b) Prevent second-impact syndrome, which results when a second concussion is sustained while an individual is still recovering from an earlier concussion and which may cause permanent brain damage or even death; and
c) Monitor student-athletes' recuperation in hopes of preventing prolonged recovery or permanent disability.

PRE-SEASON EDUCATION

All Bucknell student-athletes will be provided the NCAA Concussion Fact Sheet [APPENDIX A]. They will then sign the "Risk of Concussion or Other Head Injury Acknowledgement Form" confirming that they understand the material and that they accept responsibility for reporting their injuries, including any signs and symptoms of concussion [APPENDIX B]. The Athletic Trainer for each sport will coordinate the pre-participation educational presentation and have each student-athlete sign the necessary acknowledgement documents. These signed documents will be stored in the student-athlete's online medical file.

Annually, all Bucknell coaches & staff complete an online Concussion Awareness training module [APPENDIX C] and review the NCAA Concussion Fact Sheet. As part of the online training module, they will be tested and then electronically acknowledge that they understand the material, will encourage student-athletes to report their symptoms of concussion, and will accept the responsibility for referring student-athletes to the medical staff if a concussion is suspected.

All Bucknell team physicians and athletic trainers will read the University's Concussion Management Plan and the NCAA Concussion Fact Sheet. These same individuals also complete the online Concussion Awareness Module in addition to a focused emphasis on CEU's. The Associate AD – Sports Medicine will coordinate an annual meeting with Athletic Training staff to review the Concussion policy and any changes. Contract Team Physicians are required by Geisinger Health System to regularly complete in-house training education program.

PRE-PARTICIPATION

Prior to participation in practice or competition, all first-year intercollegiate student-athletes will complete a baseline evaluation. This evaluation will include a neuropsychological test (ImPACT, a balance evaluation), and complete an online health questionnaire to report prior history of concussion. An athletic trainer, in consultation with the team physician, will review the submitted pre-participation materials and determine pre-participation clearance and/ or the need for additional consultation or testing. Team physician shall have final say in determining pre-participation clearance. Additionally, those student-athletes with a previous concussion will be baseline tested prior to the start of his/her sport the following year.

RECOGNITION AND DIAGNOSIS OF CONCUSSION

Student-athletes who exhibit signs, symptoms, or behaviors consistent with a concussion shall be removed from practice/competition immediately and evaluated by a staff athletic trainer (as an acute injury). Any student-athlete with a suspicion of a concussion shall be excluded from all athletic activity for the remainder of the day.

For all home varsity competitions, a licensed athletic trainer with training in the diagnosis, treatment and initial management of acute concussion is required to be present on-site to manage care of injuries. In addition, a licensed athletic trainer with training in the diagnosis, treatment and initial management of acute concussion shall be available via radio or cell phone for varsity practices so that immediate arrangements can be made for the student-athlete to be evaluated. In the event no staff athletic trainer is present for neutral-site or away competitions, the host site medical personnel should be contacted for evaluation. Coaches are to contact their Bucknell staff athletic trainer to alert them to the student-athlete's condition and facilitate follow-up care with team physician.

The initial response to a suspected concussion evaluation will include:

1) Student -athlete either states that "he/she believes they have been concussed." OR

2) The athletic trainer and/or coaches through observation of possible head injury remove the student-athlete from practice or contest and administer the neuropsychological Symptomatic Concussion Assessment Tool (SCAT3 – APPENDIX D).
    a. Evaluation tools include: Neuropsychological testing (SCAT3), balance testing, physical examination, symptom evaluation, and imaging if deemed appropriate by the team physician.
    b. Assessment for head and cervical spine injury at time of injury and implementation of the emergency action plan, as warranted.

    c. Transportation to the nearest hospital if any of following signs and symptoms are present: Glasgow Coma score less than 13; prolonged period of loss of consciousness (longer than 1 minute); focal neurological deficit; repetitive emesis; persistently diminished or worsening mental status or other neurological signs or symptoms; and potential spine injury.

    d. Serial evaluation and monitoring for deterioration following injury. Upon discharge from medical care, both oral and written instructions for home care should be given to the student-athlete and to a responsible adult (e.g., parent or roommate) who should continue to monitor and supervise the student-athlete during the acute phase of sport-related concussion.

    e. ***No two concussions are the same, even for a single athlete. As a result, it is impossible to determine the outcome, severity, and duration of symptoms at the time of injury.

3) Team Physician is contacted and notified of possible concussion

4) Student-Athlete is provided Concussion Post-Injury Recovery Plan on signs and symptoms [APPENDIX E]
        i. Included is contact information for extra assistance for (i) Director of Office of Accessibility Resources; (ii) Director of Student Health; and (iii) Team Physicians

5) Student-Athlete is scheduled for an appointment with Team Physician to review Injury.
    a. As needed, letter is sent to Academic Dean providing possible assistance and/or extension of work, and/or excuse from exams may be needed during certain length of time.
    b. A second letter will be produced if symptoms exceed that length of time and an additional extension is needed.

6) Post-Injury Follow-Up: Student-athlete is seen daily by Athletic Trainer to monitor symptoms via SCAT Symptom Score Sheet ATC receives direction from the physician through direct communication (monitor symptoms until asymptomatic).

The Department of Athletics will have on file and annually update an emergency action plan for each athletics venue to respond to student-athlete catastrophic injuries and illnesses, including but not limited to concussions, heat illness, spine injury, cardiac arrest, respiratory distress (e.g. asthma), and sickle cell trait collapses. All athletics healthcare providers and coaches shall review and practice the plan annually. These sessions will be conducted prior to the start of the sport season.

Bucknell athletic training staff and other athletics healthcare providers will practice within the standards as established for their professional practice.

RETURN TO LEARN

The concussed student-athlete's academic dean will be sent a concussion awareness letter by the athletic trainer or physician to use to notify his/her professors that the student-athlete is being treated for a concussion. No classrooms activity will take place on the day of injury and student-athlete shall remain at home/dorm if he/she cannot tolerate light cognitive activity.

The athletic trainer will notify Bucknell's Director of Student Health regarding the concussed student-athlete and an appointment set-up for monitoring of the Return to Learn protocol. Other campus resources will also be engaged by the student-athlete by contacting the Office of Accessibility Resources (OAR). The Director of the Office of Accessibility Resources will work in conjunction with the Director of Student Health and other members of the multidisciplinary team concerning the individual academic needs/accommodations to ensure ADAAA compliance. The team members shall include, but not be limited to: Athletic Trainer; Team Physician; Director of Student Health; Director of Accessibility Resources; Dean of the respective Academic College; and, Coach.

The concussed student-athlete will follow up daily with the athletic trainer to complete a graded symptom checklist. The student-athlete's athletic trainer will function as the point person within athletics to help the student-athlete navigate the return to learn process; and will collaborate with the team and University physicians, coaches and OAR to create a plan for academic reintroduction.

An individualized plan will be developed to assist the concussed student-athlete to progress from cognitive rest to gradual return to the classroom/ studying for a modified schedule/academic accommodation for up to two weeks. If the student-athlete reports worsening symptoms with academic activity or symptoms lasting longer than two weeks, the physician and members of the multidisciplinary team will reevaluate.

RETURN TO PLAY

The concussed student-athlete will have daily follow up with their athletic trainer to assess their symptoms. Once the student-athlete reports that they have been symptom free or back to baseline symptoms for 24 hours, while performing full academic activity, the student-athlete will begin the return to play protocol. If symptoms last greater than 7 days or complex concussion symptoms occur, an ImPACT Test will be done prior to full contact practice. When these test results have returned to within normal limits and remains symptom free, the student-athlete may return to full contact practice with no restrictions with permission of the team physician.

Return to Play (RTP) presents athletic trainers with a standardized series of steps to ensure the safe return of a recovering concussed student-athlete. These steps progress the student-athlete through daily SCATs ensuring the asymptomatic progression to the next step of the Return to Play protocol. Any return of symptoms forces the athlete to return to a previous step until completion. In some more severe cases, student-athlete may restart the protocol again at Step 1.

The graduated exertion protocol (APPENDIX F) allows a gradual increase in volume and intensity. The student-athlete may progress to the next step 24-hours after insuring no return of symptoms following each exercise session.

Stage 0: All signs and symptoms have been resolved for 24 Hours
Stage 1: Light aerobic exercise (15-min bike workout, No weight training.)
Stage 2: Aerobic exercise (Bike Sprint & Treadmill Incline workouts)
Stage 3: Sports specific aerobic conditioning and add resistance training slowly.
(On-field workout; weight training workout; and multi-directional movement)
Stage 4: Light, noncontact sport specific practice/drills @ full speed.
('stress test' completion and light/non-contact practice)
Stage 5: Full contact practice with no restrictions
Stage 6*: Release/return to full play and competition

* NOTE: Final return to play decisions (Stage 6) will be made solely by Bucknell Team Physicians, with advisement from the athletic training staff, based upon the individual student-athlete and his/her rate of recovery. The steps in this Return to Play progression may be modified as needed by the Team Physician on a case-by-case review.

REDUCING EXPOSURE TO HEAD TRAUMA

While 'reducing' may be difficult to quantify, Bucknell University will emphasize ways to minimize head trauma exposure through education of both student-athletes and coaches. Student-athletes will be taught and practiced in a 'safety first' approach. Measures to make sport safer will include, but are not limited to:

1. Adherence to Inter-Association consensus guidelines for Year-Round Football Practice Guidelines;
2. Adherence to NCAA consensus for Independent Medical Care Guidelines and recently passed legislation;
3. Reducing gratuitous and unneeded contact during practice;
4. Education and direction of taking the head out of the point of impact and contact;
5. Coach and student-athlete education regarding safe play and proper technique; and,
6. Consistent and on-going evaluation of practice procedures and protocols.

LEGISLATIVE REQUIREMENTS – Submission of Protocol and Certificate of Compliance

NCAA legislation requires that the University's Concussion Safety Protocol be submitted to the Division I Concussion Safety Protocol Review Committee by May 1 and be accompanied by a written certificate of compliance. Within the certificate, the institution certifies that the Concussion Safety Protocol is consistent with the Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Best Practices and otherwise meets the requirements of Constitutions 3.2.4.18 and 3.2.4.18.1. The certificate of compliance should be submitted to the NCAA on institutional letterhead and signed by the institution's athletics health care administrator.

In a change from past years, starting in 2017, the University's athletics health care administrator will now be responsible for organizing and submitting the institution's protocol. The athletics health care administrator is a new designation established by the recent independent medical care legislation and has been assigned to the Deputy Athletic Director for Bucknell. Per that legislation, the athletics health care administrator is responsible to "oversee the institution's athletic health care administration and delivery."

APPENDIX A

STUDENT-ATHLETE EDUCATIONAL MATERIAL

★ ★ ★ ★

Concussions

What you should know

What is a concussion

- All concussions are Traumatic Brain Injuries and are serious.
- Concussions can occur in ALL sports

Causes of a Concussion

- A Hit, bump, blow, or jolt to the body transmitted to the head
- Even a minor blow can cause a concussion
- It is important to understand that you cannot "see" a concussion. It is a disruption to how the brain works on a cellular level.

Concussion Basics

- Concussion symptoms such as headaches and disorientation may disappear in 15 minutes.
- But 75% of those tested 36 hours later still had problems with memory and cognition.

How to Recognize a Concussion

All athletes who have experienced a forceful bump, blow, or jolt to the head need to be evaluated by Medical Personnel

It is very important to encourage athletes to immediately report any hits to the head or body that cause concussive signs and symptoms.

Symptoms Reported by Athletes

- Headache or pressure in the head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light and/or noise
- Feeling sluggish, hazy, foggy, or groggy
- Confusion
- Just don't feel right

Management of Concussions

- Athletes should not play with a concussion. *Resting the concussion is not a sign of weakness.*
- Athlete will be out of play until cleared by the **Team Physician**
- The student-athlete must complete a gradual return to play protocol program as outlined by the Sports Medicine Staff

Management of Concussions

- Rest is needed. It is important to understand that both cognitive and physical exertion can delay recovery.
- Also, any delay in reporting symptoms may increase recovery time.
- Limit texting, videos games, computer use & television. There use can increase symptoms

- Questions

CONCUSSION

A FACT SHEET FOR STUDENT-ATHLETES

WHAT IS A CONCUSSION?

A concussion is a brain injury that:

- Is caused by a blow to the head or body.
  - From contact with another player, hitting a hard surface such as the ground, ice or floor, or being hit by a piece of equipment such as a bat, lacrosse stick or field hockey ball.
- Can change the way your brain normally works.
- Can range from mild to severe.
- Presents itself differently for each athlete.
- Can occur during practice or competition in ANY sport.
- **Can happen even if you do not lose consciousness.**

HOW CAN I PREVENT A CONCUSSION?

Basic steps you can take to protect yourself from concussion:

- Do not initiate contact with your head or helmet. You can still get a concussion if you are wearing a helmet.
- Avoid striking an opponent in the head. Undercutting, flying elbows, stepping on a head, checking an unprotected opponent, and sticks to the head all cause concussions.
- Follow your athletics department's rules for safety and the rules of the sport.
- Practice good sportsmanship at all times.
- Practice and perfect the skills of the sport.

WHAT ARE THE SYMPTOMS OF A CONCUSSION?

You can't see a concussion, but you might notice some of the symptoms right away. Other symptoms can show up hours or days after the injury. Concussion symptoms include:

- Amnesia.
- Confusion.
- Headache.
- Loss of consciousness.
- Balance problems or dizziness.
- Double or fuzzy vision.
- Sensitivity to light or noise.
- Nausea (feeling that you might vomit).
- Feeling sluggish, foggy or groggy.
- Feeling unusually irritable.
- Concentration or memory problems (forgetting game plays, facts, meeting times).
- Slowed reaction time.

Exercise or activities that involve a lot of concentration, such as studying, working on the computer, or playing video games may cause concussion symptoms (such as headache or tiredness) to reappear or get worse.

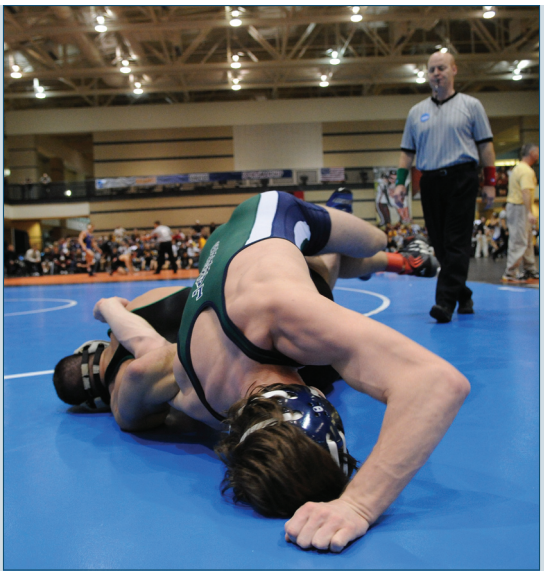
WHAT SHOULD I DO IF I THINK I HAVE A CONCUSSION?

Don't hide it. Tell your athletic trainer and coach**.** Never ignore a blow to the head. Also, tell your athletic trainer and coach if one of your teammates might have a concussion. Sports have injury timeouts and player substitutions so that you can get checked out.

Report it. Do not return to participation in a game, practice or other activity with symptoms. The sooner you get checked out, the sooner you may be able to return to play.

Get checked out. Your team physician, athletic trainer, or health care professional can tell you if you have had a concussion and when you are cleared to return to play. A concussion can affect your ability to perform everyday activities, your reaction time, balance, sleep and classroom performance.

Take time to recover. If you have had a concussion, your brain needs time to heal. While your brain is still healing, you are much more likely to have a repeat concussion. In rare cases, repeat concussions can cause permanent brain damage, and even death. Severe brain injury can change your whole life.



IT'S BETTER TO MISS ONE GAME THAN THE WHOLE SEASON. WHEN IN DOUBT, GET CHECKED OUT.

For more information and resources, visit www.NCAA.org/health-safety and www.CDC.gov/Concussion.

Reference to any commercial entity or product or service on this page should not be construed as an endorsement by the Government of the company or its products or services.

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CONCUSSION SAFETY

WHAT STUDENT-ATHLETES NEED TO KNOW

What is a concussion?

A concussion is a type of traumatic brain injury. It follows a force to the head or body and leads to a change in brain function. It is not typically accompanied by loss of consciousness.

How can I keep myself safe?

1. Know the symptoms.

You may experience …

- Headache or head pressure
- Nausea
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light or noise
- Feeling sluggish, hazy or foggy
- Confusion, concentration or memory problems

2. Speak up.

- If you think you have a concussion, stop playing and talk to your coach, athletic trainer or team physician immediately.

3. Take time to recover.

- Follow your team physician and athletic trainer's directions during concussion recovery. If left unmanaged, there may be serious consequences.
- Once you've recovered from a concussion, talk with your physician about the risks and benefits of continuing to participate in your sport.

How can I be a good teammate?

1. Know the symptoms.

You may notice that a teammate …

- Appears dazed or stunned
- Forgets an instruction
- Is confused about an assignment or position
- Is unsure of the game, score or opponent
- Appears less coordinated
- Answers questions slowly
- Loses consciousness

2. Encourage teammates to be safe.

- If you think one of your teammates has a concussion, tell your coach, athletic trainer or team physician immediately.
- Help create a culture of safety by encouraging your teammates to report any concussion symptoms.

3. Support your injured teammates.

- If one of your teammates has a concussion, let him or her know you and the team support playing it safe and following medical advice during recovery.
- Being unable to practice or join team activities can be isolating. Make sure your teammates know they're not alone.

No two concussions are the same. New symptoms can appear hours or days after the initial impact.
If you are unsure if you have a concussion, talk to your athletic trainer or team physician immediately.

What happens if I get a concussion and keep practicing or competing?

- Due to brain vulnerability after a concussion, an athlete may be more likely to suffer another concussion while symptomatic from the first one.
- In rare cases, repeat head trauma can result in brain swelling, permanent brain damage or even death.
- Continuing to play after a concussion increases the chance of sustaining other injuries too, not just concussion.
- Athletes with concussion have reduced concentration and slowed reaction time. This means that you won't be performing at your best.
- Athletes who delay reporting concussion take longer to recover fully.

What are the long-term effects of a concussion?

- We don't fully understand the long-term effects of a concussion, but ongoing studies raise concerns.
- Athletes who have had multiple concussions *may* have an increased risk of degenerative brain disease and cognitive and emotional difficulties later in life.

What do I need to know about repetitive head impacts?

- Repetitive head impacts mean that an individual has been exposed to repeated impact forces to the head. These forces may or may not meet the threshold of a concussion.
- Research is ongoing but emerging data suggest that repetitive head impact also may be harmful and place a student-athlete at an increased risk of neurological complications later in life.

Did you know?

- NCAA rules require that team physicians and athletic trainers manage your concussion and injury recovery independent of coaching staff, or other non-medical, influence.
- We're learning more about concussion every day. To find out more about the largest concussion study ever conducted, which is being led by the NCAA and U.S. Department of Defense, visit ncaa.org/concussion.

CONCUSSION TIMELINE

Baseline Testing
Balance, cognitive and neurological tests that help medical staff manage and diagnose a concussion.

Concussion
If you show signs of a concussion, NCAA rules require that you be removed from play and medically evaluated.

Recovery
Your school has a concussion management plan, and team physicians and athletic trainers are required to follow that plan during your recovery.

Return to Learn
Return to school should be done in a step-by-step progression in which adjustments are made as needed to manage your symptoms.

Return to Play
Return to play only happens after you have returned to your preconcussion baseline and you've gone through a step-by-step progression of increasing activity.

For more information, visit ncaa.org/concussion.

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APPENDIX B

PRE-PARTICIPATION EVALUATION TOOLS & ACKNOWLEDGEMENT SIGN-OFF

SPORTS MEDICINE

Risk of Concussion or Other Head Injury Acknowledgement

I, _____, acknowledge that I have to be an active participant in my own healthcare. As such, I
(Print First & Last Name)
have the direct responsibility for reporting all of my injuries and illnesses to the Sports Medicine Staff of Bucknell University (certified athletic trainer, team physician, etc.). I recognize that the appropriateness of diagnosis, treatment, return-to-play and other decisions are dependent upon me providing an accurate medical history, including fully disclosing all symptoms and complaints regarding both previous and current injuries, disabilities, and medical concerns. I hereby affirm that I have fully disclosed in writing all prior medical conditions and injuries. I further understand that I am responsible for disclosing all future medical conditions and injuries to the Bucknell University Sports Medicine Staff.

I am aware that participation in my sport carries a risk of injury to me, including death. For example, head injuries and concussions may occur. I freely assume all risks related to my participation.

By initialing and signing below, I acknowledge that Bucknell University has provided me with specific educational material on head injuries and concussions. I understand the importance of immediately reporting symptoms of a head injury or concussion to the Bucknell University Sports Medicine Staff.

I,_____ understand that:
(Print First & Last Name)

(INITIAL EACH LINE)

_____A concussion is a brain injury. I am responsible for immediately self- reporting signs and symptoms of a concussion to the Bucknell Sports Medicine Staff.
_____Participating in intercollegiate athletics may result in a concussion or other head injury.
_____I have received information concerning the signs and symptoms of a concussion, and I understand those signs and symptoms.
_____Helmets, face shields, mouth guards, and other protective equipment do not eliminate the risk of concussions.
_____ I understand that purposeful head contact in any sport is prohibited.
_____A concussion can affect my ability to perform everyday activities including, but not limited to, reaction time, balance, sleep, and studying.
_____A concussion is not visible but is recognized by symptoms such as headache, dizziness, loss of consciousness, amnesia, vision problems, nausea, sensitivity to light, feeling sluggish, foggy or groggy, irritability, slow reaction time and concentration or memory problems.
_____Additional symptoms of a concussion may arise hours or days after the initial injury.
_____Returning to practice/games prior to being symptom free may result in a return of symptoms, a repeated concussion, or a more serious injury including death.
_____Repeated concussions may lead to permanent brain damage, psychological disorders or even death.
_____If I suspect a teammate has a concussion or other head injury, I am responsible for reporting the injury to the Bucknell Sports Medicine Staff.
_____Clearance for return to play after a head injury or concussion will be determined by the Bucknell Sports Medicine Staff and Team Physician.
_____Bucknell has the authority to permanently remove me from participation in athletic activities if it is determined to be appropriate to protect my safety and well-being.

Student Athlete's Name (Print)_____ Sport:_____

Student Athlete's Signature_____ Date_____

Parent/Guardian Signature _____Relationship_____Date_____
(If under age 18)

BUCKNELL UNIVERSITY

ASSUMPTION OF RISK, WAIVER OF LIABILITY AND RELEASE

Name:_____ Sport:_____

I wish to participate in the above sport ("Sport"). For purposes of this document, "participation" or "participate" includes try-outs, practices, competitions, and any other activities in any way associated with the Sport or intercollegiate athletics. In consideration of Bucknell University permitting my participation, I acknowledge and agree as follows:

1. My participation in the sport is purely voluntary.

2. I am aware that participating in the Sport can be dangerous and involves significant risks, including, but not limited to: serious head, neck or spinal injuries which may result in complete or partial paralysis or brain damage; serious injury to all bones, joints, ligaments, muscles, tendons, and other aspects of my body; serious injury to or diminution of my general health and well-being; and death.

3. I understand and freely assume all risks in any way related to my participation in the Sport.

4. I understand that it is my responsibility to exercise appropriate care with regard to myself and my equipment.

5. To the greatest extent allowed by law, on behalf of myself and my heirs, executors, estate and family, I release, covenant not to sue, and forever discharge Bucknell University, including their trustees, officers, employees and agents ("Released Parties"), of and from any and all liabilities, claims, causes of action, damages, costs, attorneys' fees and expenses of any kind ("Losses") arising out of or related to my participation in the Sport or any activities related to the intercollegiate athletics program, and further agree to indemnify and hold each of the Released Parties harmless from and against any and all such Losses.

I have had sufficient time to review and seek explanation of the provisions contained above. I have carefully read this document, understand it fully, and agree to be bound by its terms. This Assumption of Risk, Waiver of Liability and Release agreement shall bind my heirs, estate, executor, administrator, assigns and all members of my family.

BY SIGNING THIS DOCUMENT, YOU ARE WAIVING CLAIMS AND LEGAL RIGHTS. READ CAREFULLY BEFORE SIGNING.

Print Name	Signature		Date

If under age 18:

Parent/Guardian Printed Name	Signature	Relationship	Date

STATEMENT OF RESPONSIBILITY FOR SPORT SAFETY

Student-Athlete Name: _____

Sport: _____

I wish to participate in the above sport ("Sport"). For purposes of this document, "participation" or "participate" includes try-outs, practices, competitions, and any other activities in any way associated with the Sport or intercollegiate athletics. In consideration of Bucknell University permitting my participation, I acknowledge and agree as follows:

1. I recognize the importance of following the coach's instructions regarding playing techniques, training rules, and other team rules, and agree to obey such instructions.

2. I agree to inspect all safety equipment and report any faulty or poor-fitting equipment immediately to the coach, equipment manager, or Certified Athletic Trainer. I understand that I am responsible for taking care of myself and my equipment. In addition, I agree to use equipment only in the manner in which it is intended to be used.

3. I understand that **ALL** injuries must immediately be reported to a member of the Bucknell University Sports Medicine Staff, specifically a Certified Athletic Trainer and agree to do so accurately and completely. I understand that the Certified Athletic Trainer will make a decision as to whether a physician referral is needed. I also understand that I will be required to obtain the clearance of the team physician, if seen by an outside physician, before being permitted to participate in the Sport following an injury. I further understand that irrespective of the clearance of the team physician, I may be at greater risk of suffering injury, illness or death as a result of my participation following an injury. In order to discuss specific additional risks associated with my participation in the Sport, I will consult with my personal physician or a specialist, in addition to the team physician.

4. I understand and agree that I **MUST** provide proof of comprehensive medical insurance in order to be allowed to participate in any intercollegiate athletics at Bucknell University, including the above Sport. It is my responsibility to confirm in-network medical coverage within the Geisinger Health Systems and the associated facilities by which our team physicians are employed. I understand that if I am injured and my medical insurance does not cover associated costs and expenses, I am responsible for **ALL** medical bills including, but not limited to, doctors' visits, diagnostic images, lab work, surgeries, etc. These expenses are solely my responsibility and are not in any way the responsibility of Bucknell University or its trustees, officers, employees or agents. I further understand that I have the opportunity to purchase personal medical insurance offered to all Bucknell University students. I understand that if I fail to do so, I am putting myself at risk of having to go home for in-network medical coverage, which may delay my return to participation.

I have had sufficient time to review and seek explanation of the provisions contained above. I have carefully read this document, understand it fully, and agree to be bound by its terms. This Statement of Responsibilities for Sport Safety agreement shall bind my heirs, estate, executor, administrator, assigns and all members of my family.

BY SIGNING THIS DOCUMENT, YOU ARE WAIVING CLAIMS AND LEGAL RIGHTS. READ CAREFULLY BEFORE SIGNING.

_____	_____	_____
Student-Athlete's Printed Name	Student-Athlete's Signature	Date
_____	_____	_____
Parent/Guardian's Printed Name (if under 18)	Parent/Guardian's Signature	Date

2017-2018

SPORTS MEDICINE

Pre-Participation Physical Examination for NCAA Varsity Athletics

***Complete medical history questionnaire on www.swol123.net & print to be reviewed by physician.**

SECTION 1 – ***Must be filled out by student-athlete.***

Name:_____ **Sport:**_____

Bucknell University Graduating Class:_____ **(circle one) First Year Athlete / Returning Athlete**

Sex: Male or Female (circle one) **Age:**_____ **Date of Birth:**_____

SECTION 2 - ***Must be filled out by approved medical personnel performing physical exam.***

Height_____**Weight**_____**BP**____/____**Pulse**_____

Medical Examination			
	Normal	**Abnormal Findings**	**Initials**
ENT			
Cardiovascular			
Cardiopulmonary			
Lungs			
Abdomen			
Neurological			
Skin			
Genitourinary (Males Only)			
Other			
Musculoskeletal Exam			
	Normal	**Abnormal Findings**	**Initials**
Scoliosis			
Neck			
Shoulder/Arm			
Elbow/Forearm			
Wrist/Hand/Fingers			
Back			
Hip/Thigh			
Knee/Leg			
Ankle/Foot/Toes			
Other			

Clearance for NCAA Division I Intercollegiate Athletics Participation

- ¨ Cleared
- ¨ Cleared after completing evaluation/rehabilitation for:_____
- ¨ Not Cleared Reason:_____

Recommendations/Referral: _____

_____

Name of Medical Examiner:_____**Date:**_____

Address: _____**Phone:** _____

Signature _____**MD, DO, PAC, CRNP, SNP**

Athlete Signature **Date** **Parent Signature (If under 18)** **Date**

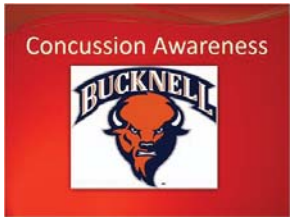
APPENDIX C

EDGE ONLINE CONCUSSION EDUCATION MODULE FOR STAFF

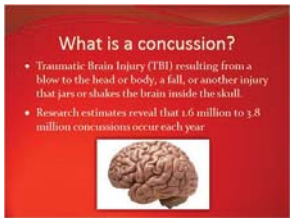
Concussion Awareness

1. Bucknell Coaches Concussion Training

1.1 Concussion Awareness



1.2 What is a concussion?



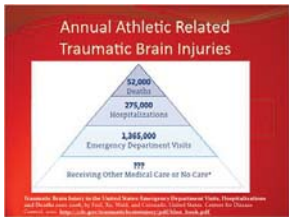
Notes:

A concussion is a Traumatic Brain Injury or TBI, caused by a blow to the head or body, a fall, or another injury that jars or shakes the brain inside the skull. Even a "ding" or getting "your bell rung" can be a concussion

The forceful injury to the brain results a trauma-induced change in mental status. At the cellular level, there is a complex pathophysiological process that changes the way cells in the brain work

A concussion can set up a chain of events that disturbs brain metabolism and can result in cell death in the brain, which will be undetectable by traditional neuro-imaging tests such as CT or MRI - these tests do not magnify, and much of the disturbance is going on at a microscopic - cellular level

1.3 Annual Athletic Related

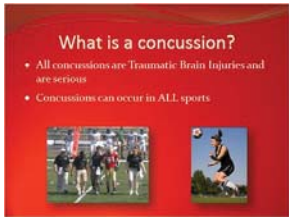


Notes:

The Centers for Disease Control are charged with conducting epidemiological research to study the incidence and prevalence of disease and injury. Latest CDC studies show there are 1.7 million new brain injuries occurring each year. The majority of these injuries, 75% or roughly 1.4 million, are mild brain injuries - the type that are evaluated in an emergency room, treated, and released.

However, many people with concussion - which is a mild brain injury - are never even evaluated, and that is what the CDC is representing in the uncountable base of the pyramid. These are people who are never treated - which could bring the total number of concussions occurring per year to as many as 3.8 million.

1.4 What is a concussion?



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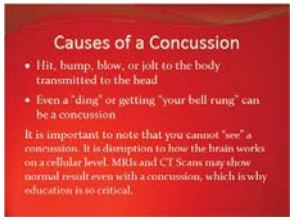
1.5 Causes of a Concussion



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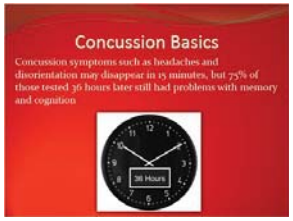
1.6 Concussion Basics



Notes:

Many athletes will recover fully from a concussion, whereas others will have persistent symptoms for weeks, months, or even years.

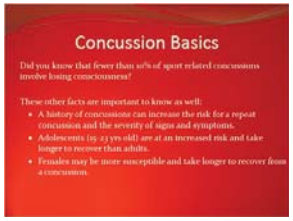
Concussion symptoms like headaches and disorientation may disappear in 15 minutes, but 75% of those tested 36 hours later still had problems with memory and cognition.

Research estimates suggest there are somewhere between 1.6 million to 3.8 million concussions occur each year. Some studies suggest that females are twice as likely to sustain a concussion as males

Fewer than 10% of sport related concussions involve a Loss of Consciousness, but may just involve an alteration in consciousness

5-10% of athletes will experience a concussion in any given sport season

1.7 Concussion Basics



Notes:

One of the great myths about concussions is that you have to lose consciousness in order to have sustained a concussion

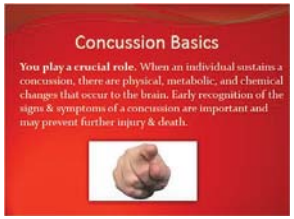
Actually, 90% of concussions do not involve a loss of consciousness, but rather an "alteration" in consciousness. All concussions are considered a traumatic brain injury and are potentially serious

Since the majority of concussion occur without a loss of consciousness, and are not always identified, many athletes suffer repeated concussions. Having even a single concussion can increase the risk of having repeated concussions. Adolescents' bodies and brains are different than adults, and the risk to them can be greater, and they can take longer than adults to recover. There are differences between male and female brains, and females may have more susceptibility and take longer to recover

Damage to the brain from a concussion may occur at the cellular level, and brain cells are microscopic, so not able to be "seen" on structural scans like CT or MRI. The same forces that can shear a brain cell can also affect support cells, and tiny capillaries in the brain, resulting in metabolic and chemical disturbances as well

A concussion not recognized and treated can result in even more serious injury or even death in cases of Second Impact Syndrome, a condition in which the brain swells rapidly and catastrophically after a person suffers a second concussion before symptoms of an initial concussion have subsided.

1.8 Concussion Basics



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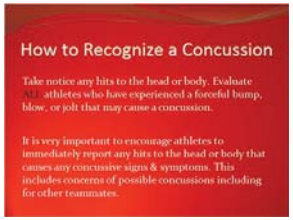
1.9 How to Recognize a Concussion



Notes:

Players and referees may be in a better position to actually see any hits to the head or body affecting a player

Sideline staff should monitor and take seriously all forceful bumps, blows, or jolts that may cause a concussion

Encourage athletes to immediately report any hits to the head or body. Everyone - Coaches, athletic trainers, players, parents, should be encouraged to report concerns of possible concussions immediately

And once a concussion is suspected, its your responsibility to have the athlete evaluated by a professional with training and experience in concussion.

1.10 What to look for as a Coach

Notes:

How do coaching staff know a player has a concussion? You may observe any of these signs and symptoms:

Appears dazed or stunned

Is confused about assignment or position

Forgets an instruction

Is unsure of game, score, or opponent

Moves clumsily

Answers questions slowly

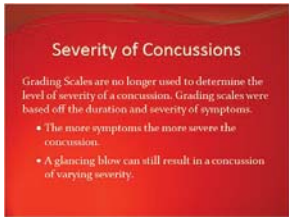
Loses consciousness (even briefly)

Shows mood, behavior, or personality changes

Can't recall events *prior* to hit or fall

Can't recall events *after* hit or fall

1.11 Severity of Concussions



Notes:

We used to spend a lot of energy with various systems for grading concussions, but that is just not done any more. Its important to treat every concussion as potentially serious, have the athlete properly evaluated by a professional with training and experience in concussions

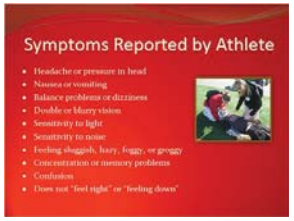
Grading Scales are no longer used to determine the level of severity of a concussion anymore. Now we evaluate every concussion, and

The concussion severity becomes determined eventually based on symptoms severity, which may not be apparent initially

The more symptoms the the athlete experiences, the more severe the concussion

- Mild symptoms = Mild concussion
- Moderate symptoms = Moderate concussion
- Severe symptoms = Severe concussion

1.12 Symptoms Reported by Athlete



Notes:

What the athlete is experiencing initially may include any one of these, or multiple symptoms such as:

Headache or pressure in head

Nausea or vomiting

Balance problems or dizziness

Double or blurry vision

Sensitivity to light

Sensitivity to noise

Feeling sluggish, hazy, foggy, or groggy

Concentration or memory problems

Confusion

Does not "feel right" or "feeling down"

1.13 Activity

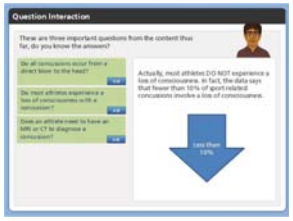
Notes:

The FAQ Interaction provides learners the option to freely navigate answers to frequently asked questions.

Use the interaction to provide context to previously covered material.

question 1 (Slide Layer)

question 2 (Slide Layer)



question 3 (Slide Layer)

1.14 Removal of an Athlete

Notes:

When you suspect a possible concussion:

- Remove athlete from play immediately
  - When in doubt, sit them out!
- Refer to appropriate medical professional with training & experience in concussion diagnosis & treatment for further evaluation
- Inform athlete's parent/guardian
  - Provide take home instructions (CDC Fact Sheet)
- Keep out of play until cleared by an appropriate medial professional
- Must complete a gradual return to play program over a minimum of 5 days

1.15 Removal of an Athlete

Notes:

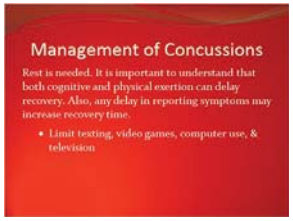
So there is a new standard being promoted here - that even if you think there is the possibility of a concussion, you should pull the player out and evaluate them

Athletes are sometimes their own worst enemy - they believe they are letting down their fellow athletes if they admit they are having symptoms of a concussion, and they sometimes insist on going back into play

Athletes should NOT play with a concussion

- Remind athletes that it is dangerous to continue to play
- Report it, Don't hide it!
- When in Doubt, Sit them Out!
- Resting due to a concussion is NOT a sign of weakness

1.16 Management of Concussions



Notes:

Once the concussion has been suspected, it is essential to keep the athlete out of the game

Both Cognitive and Physical Rest is needed to allow the brain time to recover.

Physical or cognitive exertion can delay or decrease recovery - Ignoring a concussion will make it worse

A Health Care Professional will make immediate and longer term recommendations, based on evaluation of symptoms. Recommendations may include diet considerations, when and how to study and what to avoid in order that the brain can heal.

1.17 Ongoing assessment

Notes:

Concussion signs & symptoms may not occur immediately, but may evolve over hours or even days following the concussion

Therefore it is important to assess the athlete periodically for several hours after, and to inform parents/guardians to watch for worsening signs & symptoms of a concussion

Notify the Team Physician that a

concussion has occurred.

1.18 "Danger Signs"

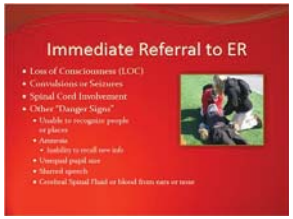
Notes:

Signs that may signal further neurological deterioration include:

- Drowsiness/Inability to awaken
- Increasing headache or one that doesn't resolve
- Weakness, numbness, or lack of coordination
- Vomiting or nausea
- Slurred speech

These "Danger Signs" constitute a medical emergency and warrant immediate evaluation at a Hospital Emergency Room

1.19 Immediate Referral to ER



Notes:

Any of these symptoms should require an immediate evaluation in a Hospital Emergency Room

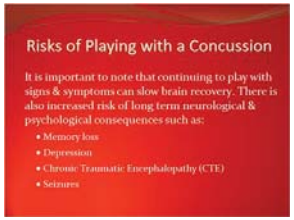
- Loss of Consciousness (LOC)
- Convulsions or Seizures
- Spinal Cord Involvement

Other "Danger Signs"

- Unable to recognize people or places
- Amnesia - the Inability to recall new info
- Unequal pupil size
- Slurred speech

- Cerebral Spinal Fluid from ears or nose

1.20 Risks of Playing with a Concussion



Notes:

Players who don't call out and recognize concussions are risking even more serious consequences if they continue to play after a concussion. The effects of multiple concussions may be cumulative, and if there is not sufficient time for the brain to recover after an initial concussion, the athlete runs the risk of suffering Second

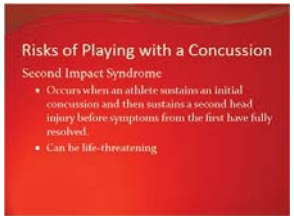
Impact Syndrome

Second-impact syndrome (**SIS**) is a condition in which the brain swells rapidly and catastrophically after a person suffers a second concussion before recovering from an earlier one. The second concussion could occur minutes, days, or weeks after the initial, and is often fatal or results in severe

There is also an Increased risk of long term neurological & neuropsychological consequences

Chronic Traumatic Encephalopathy (**CTE**) is a progressive degenerative disease, diagnosed after death in athletes with a history of multiple concussions. Individuals with CTE may show symptoms of dementia, such as memory loss, aggression, confusion, and depression, which may appear within months of the trauma or even decades

1.21 Second Impact Syndrome



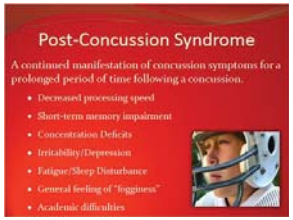
Notes:

In rare cases, there are can be a catastrophic outcome when an athlete returns to play

too soon following an initial concussion

Second Impact Syndrome occurs when an athlete sustains an initial concussion and then sustains a second head injury before symptoms from the first have fully resolved.

1.22 Post-Concussion Syndrome



Notes:

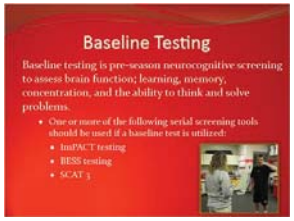
Symptoms of a concussion should normally subside within 2 weeks. If there is a continued manifestation of concussion symptoms for a prolonged period of time following a concussion, such as

- Decreased processing speed
- Short-term memory impairment
- Concentration Deficit
- Irritability/Depression
- Fatigue/Sleep Disturbance
- General feeling of "fogginess"

- Academic difficulties

The team physician will decide on the next appropriate treatment plan, but continual rest is indicated until all symptoms are gone.

1.23 Baseline Testing



Notes:

Pre-season neurocognitive screening is performed in most of our sports programs

By screening athletes prior to the start of the season, we can establish

a “baseline” against which the athlete can be compared should they sustain a concussion later.

Screening measures assess brain functions such as learning, memory, concentration, coordination, reaction time, and visual perception. Baseline testing should utilize a tool that has multiple equivalent versions so that the athlete can be tested serially over time to determine if there is improvement.

At Bucknell we use ImPACT - developed at UPMC Sports Medicine
www.impacttest.com

1.24 Question

(Pick One, 0 points, 1 attempt permitted)

Choice
Slurred speech
Headache that won't go away
Decreased confusion

Decreased confusion (Slide Layer)

Headache that won't go away (Slide Layer)

Slurred speech (Slide Layer)

1.25 Question

(Pick One, 0 points, 1 attempt permitted)

Choice
are more likely to sustain another concussion.

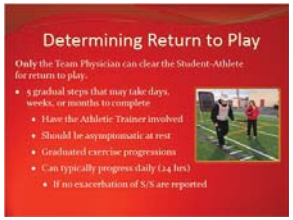
will never have another concussion.
will not sustain another concussion from a similar blow or jolt.

Feedback:

It is important to note that if an athlete has had a previous concussion they are more likely to sustain another concussion, especially if the first has not had proper time to heal.

Thank You (Slide Layer)

1.26 Determining Return to Play



Notes:

Return to Play (RTP) decisions are under the direction of appropriate medical professionals with training in concussion diagnosis & treatment

RTP should have 5 gradual steps that may take days, weeks, or months to complete

- Have the Athletic Trainer involved
- Should be asymptomatic at rest
- Graduated exercise progressions

- Can typically progress daily if no exacerbation of S/S are reported

1.27 Determining Return to Play

Notes:

The Tabs interaction is a non-linear way for learners to explore related items.

Use this interaction to:

- Condense multiple slides into folder tabs
- Create an informal knowledge check
- Present learning objectives or summarize a topic

Tab1 (Slide Layer)

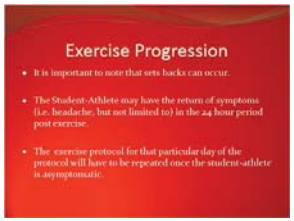
Tab2 (Slide Layer)

Tab3 (Slide Layer)

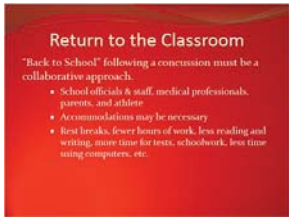
Tab4 (Slide Layer)

Tab5 (Slide Layer)

1.28 Exercise Progression



1.29 Return to the Classroom



Notes:

Getting back to "Back to School" following a concussion must be a Collaborative approach involving School officials & staff, medical professionals, parents, and the athlete him or herself.

Accommodations may be necessary including rest breaks, fewer hours of work, less reading and writing, more time for tests, schoolwork, less time using computers, etc.

Its real important to recognize that ALL concussion are different and people react to them differently. The signs & symptoms may last days, weeks or months.

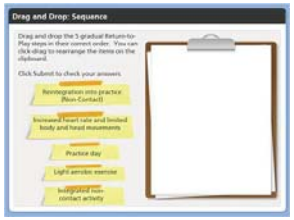
1.30 Return to the Classroom

Notes:

Its real important to recognize that ALL concussion are different and people react to them differently. The signs & symptoms may last days, weeks, months or longer

1.31 Activity

(Drag and Drop, 10 points, 2 attempts permitted)



Drag Item	Drop Target
Group 1	dropzone 3
Group 2	dropzone 1
Group 3	dropzone 4
Group 4	dropzone
Group 5	dropzone 2

Drag and drop properties
Return item to start point if dropped outside the correct drop target
Snap dropped items to drop target (Snap to center)
Allow only one item in each drop target
Delay item drop states until interaction is submitted

Feedback when correct:

That's right! You sequenced the RTP steps in the correct order.

Feedback when incorrect:

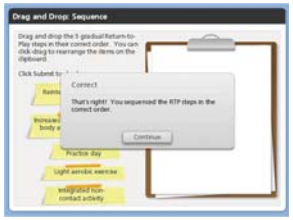
You did not sequence the steps in the correct order. You may want to review the information.

Notes:

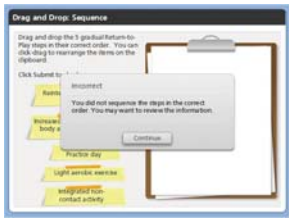
This Sequence Drag and Drop interaction features an informal design that's adaptable for almost any type of content.

Use this interaction to test your learners' ability to identify the correct sequence of events.

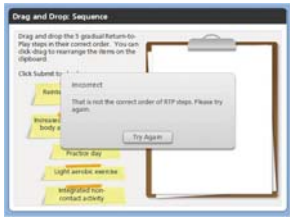
Correct (Slide Layer)



Incorrect (Slide Layer)



Try Again (Slide Layer)



1.32 Summary

Notes:

Its real important to recognize that ALL concussion are different and people react to them differently. The signs & symptoms may last days, weeks, months or longer

1.33 Course Exit

CONCUSSION

A FACT SHEET FOR COACHES

THE FACTS

- A concussion is a brain injury.
- All concussions are serious.
- Concussions can occur without loss of consciousness or other obvious signs.
- Concussions can occur from blows to the body as well as to the head.
- Concussions can occur in *any* sport.
- Recognition and proper response to concussions when they first occur can help prevent further injury or even death.
- Athletes may not report their symptoms for fear of losing playing time.
- Athletes can still get a concussion even if they are wearing a helmet.
- Data from the NCAA Injury Surveillance System suggests that concussions represent 5 to 18 percent of all reported injuries, depending on the sport.

WHAT IS A CONCUSSION?

A concussion is a brain injury that may be caused by a blow to the head, face, neck or elsewhere on the body with an "impulsive" force transmitted to the head. Concussions can also result from hitting a hard surface such as the ground, ice or floor, from players colliding with each other or being hit by a piece of equipment such as a bat, lacrosse stick or field hockey ball.

RECOGNIZING A POSSIBLE CONCUSSION

To help recognize a concussion, watch for the following two events among your student-athletes during both games and practices:

1. A forceful blow to the head or body that results in rapid movement of the head;

-AND-

2. **Any change** in the student-athlete's behavior, thinking or physical functioning (see signs and symptoms).

SIGNS AND SYMPTOMS

Signs Observed By Coaching Staff

- Appears dazed or stunned.
- Is confused about assignment or position.
- Forgets plays.
- Is unsure of game, score or opponent.
- Moves clumsily.
- Answers questions slowly.
- Loses consciousness (even briefly).
- Shows behavior or personality changes.
- Can't recall events before hit or fall.
- Can't recall events after hit or fall.

Symptoms Reported By Student-Athlete

- Headache or "pressure" in head.
- Nausea or vomiting.
- Balance problems or dizziness.
- Double or blurry vision.
- Sensitivity to light.
- Sensitivity to noise.
- Feeling sluggish, hazy, foggy or groggy.
- Concentration or memory problems.
- Confusion.
- Does not "feel right."

PREVENTION AND PREPARATION

As a coach, you play a key role in preventing concussions and responding to them properly when they occur. Here are some steps you can take to ensure the best outcome for your student-athletes:

- Educate student-athletes and coaching staff about concussion. Explain your concerns about concussion and your expectations of safe play to student-athletes, athletics staff and assistant coaches. Create an environment that supports reporting, access to proper evaluation and conservative return-to-play.
  - Review and practice your emergency action plan for your facility.
  - Know when you will have sideline medical care and when you will not, both at home and away.
  - Emphasize that protective equipment should fit properly, be well maintained, and be worn consistently and correctly.
  - Review the Concussion Fact Sheet for Student-Athletes with your team to help them recognize the signs of a concussion.
  - Review with your athletics staff the NCAA Sports Medicine Handbook guideline: Concussion or Mild Traumatic Brain Injury (mTBI) in the Athlete.
- Insist that safety comes first.
  - Teach student-athletes safe-play techniques and encourage them to follow the rules of play.
  - Encourage student-athletes to practice good sportsmanship at all times.
  - Encourage student-athletes to immediately report symptoms of concussion.
- Prevent long-term problems. A repeat concussion that occurs before the brain recovers from the previous one (hours, days or weeks) can slow recovery or increase the likelihood of having long-term problems. In rare cases, repeat concussions can result in brain swelling, permanent brain damage and even death.

IF YOU THINK YOUR STUDENT-ATHLETE HAS SUSTAINED A CONCUSSION:

Take him/her out of play immediately and allow adequate time for evaluation by a health care professional experienced in evaluating for concussion.

An athlete who exhibits signs, symptoms or behaviors consistent with a concussion, either at rest or during exertion, should be **removed immediately from practice or competition** and should not return to play until cleared by an appropriate health care professional. Sports have injury timeouts and player substitutions so that student-athletes can get checked out.

IF A CONCUSSION IS SUSPECTED:

1. **Remove the student-athlete from play.** Look for the signs and symptoms of concussion if your student-athlete has experienced a blow to the head. Do not allow the student-athlete to just "shake it off." Each individual athlete will respond to concussions differently.

2. **Ensure that the student-athlete is evaluated right away by an appropriate health care professional.** Do not try to judge the severity of the injury yourself. Immediately refer the student-athlete to the appropriate athletics medical staff, such as a certified athletic trainer, team physician or health care professional experienced in concussion evaluation and management.

3. **Allow the student-athlete to return to play only with permission from a health care professional with experience in evaluating for concussion.** Allow athletics medical staff to rely on their clinical skills and protocols in evaluating the athlete to establish the appropriate time to return to play. A return-to-play progression should occur in an individualized, step-wise fashion with gradual increments in physical exertion and risk of contact.

4. **Develop a game plan.** Student-athletes should not return to play until all symptoms have resolved, both at rest and during exertion. Many times, that means they will be out for the remainder of that day. In fact, as concussion management continues to evolve with new science, the care is becoming more conservative and return-to-play time frames are getting longer. Coaches should have a game plan that accounts for this change.

IT'S BETTER THEY MISS ONE GAME THAN THE WHOLE SEASON. WHEN IN DOUBT, SIT THEM OUT.

For more information and resources, visit www.NCAA.org/health-safety and www.CDC.gov/Concussion.

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CONCUSSION SAFETY

WHAT COACHES NEED TO KNOW

What is a concussion?

A concussion is a type of traumatic brain injury. It follows a force to the head or body and leads to a change in brain function. It is not typically accompanied by loss of consciousness.

How can I tell if an athlete has a concussion?

You may notice the athlete …

- Appears dazed or stunned
- Forgets an instruction
- Is confused about an assignment or position
- Is unsure of the game, score or opponent
- Appears less coordinated
- Answers questions slowly
- Loses consciousness

Note that no two concussions are the same. All possible concussions must be evaluated by an athletic trainer or team physician.

The athlete may tell you he or she is experiencing …

- A headache, head pressure or that he or she doesn't feel right following a blow to the head
- Nausea
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light or noise
- Feeling sluggish, hazy or foggy
- Confusion, concentration or memory problems

What can I do to keep student-athletes safe?

	Preseason	In-Season	Time of Injury	Recovery
What can I do?	Create a culture in which concussion reporting is encouraged and promoted.	Know the signs and symptoms of concussions.	Remove athletes from play immediately if you think they have a concussion and refer them to the team physician or athletic trainer.	Follow the recovery and return-to-play protocol established by team physicians and athletic trainers.
Why does it matter?	Athletes who don't immediately seek care for a suspected concussion take longer to recover.	The more people who know what to look for in a concussed athlete, the more likely a concussion will be identified.	Early removal from play can mean a quicker recovery and help avoid serious consequences.	Team physicians and athletic trainers have the training to follow best practices related to the concussion recovery process.
Tips and strategies	Be present when your team physician or athletic trainer provides concussion education material to your team. Tell your team that this matters to you.	Check in with your team physician or athletic trainer if you want to learn more about concussion safety.	Provide positive reinforcement when an athlete reports a suspected concussion.	Tell athletes that decisions related to their return to play and health are entirely in the hands of the team physician and athletic trainer.

You play a powerful role in setting the tone for concussion safety on your team. Let your team know that you take concussion seriously and reporting the symptoms of a suspected concussion is an important part of your team's values.

What happens if an athlete gets a concussion and keeps practicing or competing?

- Due to brain vulnerability after a concussion, an athlete may be more likely to suffer another concussion while symptomatic from the first one.
- In rare cases, repeat head trauma can result in brain swelling, permanent brain damage or even death.
- Continuing to play after a concussion increases the chance of sustaining other injuries too, not just concussion.
- Athletes with a concussion have reduced concentration and slowed reaction time. This means they won't be performing at their best.
- Athletes who delay reporting concussion may take longer to recover fully.

What are the long-term effects of a concussion?

- We don't fully understand the long-term effects of a concussion, but ongoing studies raise concerns.
- Athletes who have had multiple concussions *may* have an increased risk of degenerative brain disease, and cognitive and emotional difficulties later in life.

What do I need to know about repetitive head impacts?

- Repetitive head impacts mean that an individual has been exposed to repeated impact forces to the head. These forces may or may not meet the threshold of a concussion.
- Research is ongoing but emerging data suggest that repetitive head impact also may be harmful and place a student-athlete at an increased risk of neurological complications later in life.

Did you know?

- Most contact or collision teams have at least one student-athlete diagnosed with a concussion every season.
- Your school has a concussion management plan, and team physicians and athletic trainers are expected to follow that plan during a student-athlete's recovery.
- NCAA rules require that team physicians and athletic trainers have the unchallengeable authority to make all medical management and return-to-play decisions for student-athletes.
- We're learning more about concussion every day. To find out more about the largest concussion study ever conducted, which is being led by the NCAA and U.S. Department of Defense, visit ncaa.org/concussion.

For more information, visit **ncaa.org/concussion**.

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APPENDIX D

SCAT3 Tool

SCAT3™

Sport Concussion Assessment Tool – 3rd edition

For use by medical professionals only

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

What is the SCAT3?[1]

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[2]. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[1]. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision or any reproduction in a digital form requires approval by the Concussion in Sport Group.
NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgement. An athlete may have a concussion even if their SCAT3 is "normal".

What is a concussion?

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

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

SIDELINE ASSESSMENT

Indications for Emergency Management

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

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

Potential signs of concussion?

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

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

1 Glasgow Coma Scale (GCS)

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

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

2 Maddocks Score[3]

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

Modified Maddocks questions (1 point for each correct answer)

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

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

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

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

BACKGROUND

Name: Date:

Examiner:

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

Age: Gender: M F

Years of education completed:

Dominant hand: right left neither

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

When was the most recent concussion?

How long was your recovery from the most recent concussion?

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

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

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

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

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

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

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

3 How do you feel?

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

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

Total number of symptoms (Maximum possible 22)
Symptom severity score (Maximum possible 132)

Do the symptoms get worse with physical activity? Y N

Do the symptoms get worse with mental activity? Y N

self rated | self rated and clinician monitored

clinician interview | self rated with parent input

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

no different *very different* *unsure* *N/A*

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

4 Cognitive assessment

Standardized Assessment of Concussion (SAC)[4]

Orientation (1 point for each correct answer)

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

Orientation score of 5

Immediate memory

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

Immediate memory score total of 15

Concentration: Digits Backward

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

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

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

Concentration score of 5

5 Neck examination

Range of motion Tenderness Upper and lower limb sensation & strength

Findings:

6 Balance examination

Do one or both of the following tests.
Footwear (shoes, barefoot, braces, tape, etc.)

Modified Balance Error Scoring System (BESS) testing[5]

	L	R
Which foot was tested (i.e. which is the non-dominant foot)		
Testing surface (hard floor, field, etc.)		

Condition

Double leg stance: Errors

Single leg stance (non-dominant foot): Errors

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

And / Or

Tandem gait[6,7]

Time (best of 4 trials):

7 Coordination examination

Upper limb coordination

	L	R
Which arm was tested:		

Coordination score of 1

8 SAC Delayed Recall[4]

Delayed recall score of 5

INSTRUCTIONS

Words in *Italics* throughout the SCAT3 are the instructions given to the athlete by the tester.

Symptom Scale

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

To be completed by the athlete. In situations where the symptom scale is being completed after exercise, it should still be done in a resting state, at least 10 minutes post exercise.
For total number of symptoms, maximum possible is 22.
For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132.

SAC[4]

Immediate Memory

"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."

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."

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. **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

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

If correct, go to next string length. If incorrect, read trial 2. **One point possible for each string length.** Stop after incorrect on both trials. 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 completion of the Balance and Coordination Examination.

"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

Balance Examination

Modified Balance Error Scoring System (BESS) testing[5]

This balance testing is based on a modified version of the Balance Error Scoring System (BESS)[5]. A stopwatch or watch with a second hand is required for this testing.

(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."

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

Each of the 20-second trials is scored by counting the errors, or deviations from the proper stance, accumulated by the athlete. The examiner will begin counting errors only after the individual 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 total number of errors for any single condition is 10.** If a 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 subject is set. Subjects 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 50 cm x 40 cm x 6 cm).

Tandem Gait[6,7]

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 meter 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. 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. In this case, the time is not recorded and the trial repeated, if appropriate.

Coordination Examination

Upper limb coordination
Finger-to-nose (FTN) task:

"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."

Scoring: 5 correct repetitions in < 4 seconds = 1
Note for testers: Athletes fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions. Failure should be scored as 0.

References & Footnotes

1. This tool has been developed by a group of international experts at the 4th International Consensus meeting on Concussion in Sport held in Zurich, Switzerland in November 2012. The full details of the conference outcomes and the authors of the tool are published in The BJSM Injury Prevention and Health Protection, 2013, Volume 47, Issue 5. The outcome paper will also be simultaneously co-published in other leading biomedical journals with the copyright held by the Concussion in Sport Group, to allow unrestricted distribution, providing no alterations are made.
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6. Schneiders, A.G., Sullivan, S.J., Gray, A., Hammond-Tooke, G. & McCrory, P. Normative values for 16-37 year old subjects for three clinical measures of motor performance used in the assessment of sports concussions. Journal of Science and Medicine in Sport. 2010; 13(2): 196 – 201.
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ATHLETE INFORMATION

Any athlete suspected of having a concussion should be removed from play, and then 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:

- Have a headache that gets worse
- Are very drowsy or can't be awakened
- Can't recognize people or places
- Have repeated vomiting
- Behave unusually or seem confused; are very irritable
- Have seizures (arms and legs jerk uncontrollably)
- Have weak or numb arms or legs
- Are unsteady on their feet; have slurred speech

Remember, it is better to be safe.
Consult your doctor after a suspected concussion.

Return to play

Athletes should not be returned to play the same day of injury.
When returning athletes to play, they should be **medically cleared and then follow a stepwise supervised program**, with stages of progression.

For example:

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
No activity	Physical and cognitive rest	Recovery
Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity, 70 % maximum predicted heart rate. No resistance training	Increase heart rate
Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
Non-contact training drills	Progression to more complex training drills, eg passing drills in football and ice hockey. May start progressive resistance training	Exercise, coordination, and cognitive load
Full contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
Return to play	Normal game play	

There should be at least 24 hours (or longer) for each stage and if symptoms recur the athlete should rest until they resolve once again and then resume the program at the previous asymptomatic stage. Resistance training should only be added in the later stages.

If the athlete is symptomatic for more than 10 days, then consultation by a medical practitioner who is expert in the management of concussion, is recommended.

Medical clearance should be given before return to play.

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, dizziness, worsening headache, double vision or excessive drowsiness, please contact your doctor or the nearest hospital emergency department immediately.

Other important points:

- Rest (physically and mentally), including training or playing sports until symptoms resolve and you are medically cleared
- No alcohol
- No prescription or non-prescription drugs without medical supervision. Specifically:
  - No sleeping tablets
  - Do not use aspirin, anti-inflammatory medication or sedating pain killers
- Do not drive until medically cleared
- Do not train or play sport until medically cleared

Clinic phone number

Scoring Summary:

Test Domain	Score		
	Date:	Date:	Date:
Number of Symptoms of 22			
Symptom Severity Score of 132			
Orientation of 5			
Immediate Memory of 15			
Concentration of 5			
Delayed Recall of 5			
SAC Total			
BESS (total errors)			
Tandem Gait (seconds)			
Coordination of 1			

Notes:

Patient's name

Date / time of injury

Date / time of medical review

Treating physician

Contact details or stamp

APPENDIX E

POST-INJURY EDUCATIONAL MATERIALS AND HANDOUTS

ATC Contact Info:

Updated September 2016

Concussions

Information for the Student-Athlete

WHAT IS A CONCUSSION?

A concussion, also known as a traumatic brain injury, is a brain injury that results from a violent shaking motion such as whiplash, a blow to the head from a bat, ball or stick, contact with another player, or hitting a hard surface such as the ground or floor.

A concussion can occur in ANY sport during practice, games, or other non-sport related activities. A concussion can change how the brain normally works ranging from minimal to severe changes which can vary significantly between each person. A concussion does not always result in loss of consciousness.

WHAT ARE THE SYMPTOMS OF A CONCUSSION?

Symptoms, including but not limited to, can appear up to a few days later.

- Headache or confusion
- Memory loss
- Loss of consciousness
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light or noise
- Nausea
- Feeling sluggish, foggy, or groggy
- Excessive tiredness
- Unusually irritable or anxious
- Trouble concentrating or focusing

THINGS TO AVOID DURING RECOVERY

Exercise or activities that result in an increased heart rate or blood pressure, or that involve a lot of concentration can lead to increased severity of concussion symptoms or can cause symptoms to reappear if they have been absent for any period of time. Do not participate in any athletic activities until you are cleared to do so by your athletic trainer. Avoid sugary and caffeinated drinks if not part of your usual diet. Do not drink alcohol. Do not take any pain medication or sleep aids unless cleared by your athletic trainer.

Spending long periods of time outside on sunny days or in brightly lit rooms can be aggravating. Even watching TV, completing homework on your computer, or looking at your phone and texting, especially in dark rooms can increase symptoms. When completing homework take breaks every 15-20 minutes or as needed. Do not drive yourself, ask a friend or teammate to help if you need to go off campus.

TIPS TO AID IN THE RECOVERY PROCESS.

Continue your normal schedule as close as possible. You will also see Dr. O'Neil who will notify the appropriate Dean of Students who will inform your professors of your injury and can help coordinate class modifications if needed. YOU MUST ALSO SPEAK TO YOUR PROFESSOR. If you have difficulty completing school work contact Heather Fowler, Director of the Office of Accessibility Resources at (570) 577-1188.

Drink plenty of water and eat small, frequent meals especially if you are experiencing nausea. Eating Omega 3's from nuts, eggs, beans, and fish can be beneficial to the healing process. For further beneficial nutrition in formation contact Tanya Williams, Registered Dietician at (570) 577-1401.

Do not stay alone for long periods of time. Keep in quiet company of close friends or teammates.

Obtain as much sleep as needed and take naps throughout day if necessary but do not go to sleep immediately after suffering a concussion. Stay awake for a few hours before going to bed.

Contact your athletic trainer with any questions, concerns, or new symptoms.

Other Resources: Counseling and Student Development Center: (570) 577-1604

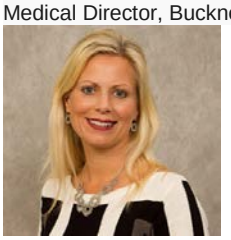
CONCUSSION MANAGEMENT PLAN -- DIRECTORY OF RESOURCES

Geisinger Sports Medicine – 570/271-6700

Bucknell Student Health –570/577-1401

Catherine A. O'Neil, MD

Medical Director, Bucknell Student Health



Dr. O'Neil is a graduate of Lock Haven University and Jefferson Medical College of Thomas Jefferson University. She completed her residency in Family Medicine at Geisinger Medical Center in Danville, PA. She has practiced as a family physician in Bloomsburg for over 10 years and has been a physician for college health since 2002. Dr. O'Neil has been the Lead Physician for Bucknell Student Health since the fall of 2013.

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A GUIDE FOR STUDENT-ATHLETES, PARENTS, FACULTY MEMBERS and OTHER UNIVERSITY STAFF

WHAT IS A CONCUSSION?

A concussion is a brain injury that may be caused by a blow to the head, face, neck or elsewhere on the body with an "impulsive" force transmitted to the head. Concussions can also result from hitting a hard surface such as the ground, ice or floor, from players colliding with each other or being hit by a piece of equipment such as a bat, lacrosse stick or field hockey ball.. According to the Center for Disease Control (CDC), "traumatic brain injury can cause a wide range of short or long term changes affecting thinking, sensation, language or emotions". These changes may lead to problems with memory and communication, personality changes, as well as occasional depression.

CONCUSSION CAN OCCUR FROM A BLOW TO THE HEAD/BODY:

- Can range from mild to severe.
- Contact with the ground, object, helmet or another player.
- Presents itself differently for each athlete.
- Can occur during practice or competition in ANY sport.
- Can happen even if you do not lose consciousness.
- symptoms can show up hours or days after the injury.

THE NUMBER AND SEVERITY OF SYMPTOMS, THE SPEED OF RECOVERY, AND THE IMPACT OF SYMPTOMS ON ACADEMIC AND SOCIAL FUNCTIONING WILL BE DIFFERENT FOR EACH STUDENT-ATHLETE.

FACTS ABOUT CONCUSSION:

- More than a million Americans sustain a concussion each year
- Concussions can occur without loss of consciousness or other obvious signs.
- Symptoms of a concussion can last hours, days, weeks, months or indefinitely
- Concussion can cause disability affecting academics, internships, social interactions or athletics.
- Returning to activity before complete recovery from a concussion may increase risks of short and long-term complications.

WHAT IS POST CONCUSSION SYNDROME (PCS):

PCS is a collection of cognitive, physical and social/emotional symptoms that persist for a varying amount of time after concussion. Some symptoms are immediate, others may not appear or be noticed for days or weeks after injury. Likewise, some symptoms may resolve fairly quickly but others can last much longer.

WHAT ARE THE SYMPTOMS OF A CONCUSSION:

You can't see a concussion, but you may notice some of the symptoms right away. Other symptoms can show up hours or days after the injury. Concussion symptoms may include:

- Amnesia
- Confusion
- Headache
- Loss of consciousness
- Balance problems or dizziness
- Double or fuzzy vision
- Sensitivity to light or noise
- Nausea (feeling that you might vomit)
- Feeling sluggish, foggy or groggy
- Feeling unusually irritable
- Difficulty getting to sleep or disrupted sleep
- Slowed reaction time
- Concentration or memory problems (forgetting assignments, facts, meeting/class time)

HOW LONG DOES IT TAKE TO RECOVER AND WHEN IS IT SAFE TO RETURN TO FULL ACADEMIC PARTICIPATION AFTER A CONCUSSION?

Most recover fully from a concussion, but it can take weeks, months or even years. Recovery may take longer in those with a previous history of concussion, learning disability or attention disorder. The student must be asymptomatic at rest and sustain a specific level of cognitive activity without a return of symptoms. These conditions are prerequisites for possible return to athletic activities.

WHEN IS IT SAFE TO RETURN TO ATHLETIC PARTICIPATION AFTER A CONCUSSION?

Student-athletes will not be permitted to return to participation after a concussion until symptom free for a specified period of time. The length of time depends on the student-athlete's history, the severity of the injury and other factors.

A GUIDE FOR STUDENT-ATHLETES, PARENTS, FACULTY MEMBERS and OTHER UNIVERSITY STAFF

COGNITIVE REST: Cognitive rest is an often neglected component of concussion recovery. A student recovering from a concussion is faced with predictable challenges in the academic realm. Mental/physical fatigue and sleep disruption may leave the student-athlete without the mental capacity to participate in a full day of classes and subsequent efforts necessary for assignments or scheduled exams.

Our therapeutic goal during recovery involves eliminating athletic activity and limiting physical activity while increasing cognitive rest by reducing demands pertaining to learning, concentration and memory - as these are directly affected by a concussion. The therapeutic goal requires a synchronization of academic support initiated by the Sports Medicine staff to the Academic Deans – often resulting in communication with professors and possibly disability services.

GENERAL RECOMMENDATIONS FOR THE STUDENT RECOVERING FROM A CONCUSSION

RECOMMENDATIONS:	RATIONALE:
Rest period during the day	When symptoms flare, brief rest may allow student to return to class
Reduction of light or noise sensitivity	Fluorescent light and high-stimulation environments may cause symptoms
Monitor computer use, TV use, video games, electronics	Avoidance of cognitive stresses
Preferential classroom seating	Lessens distractions
Extension of assignment deadlines	Postponement or staggering of exams in accordance with faculty member's make-up privileges
Temporary assistance from a tutor, coach or faculty member	Assistance in organizing and prioritizing assignments
Communicated absence from class	Complete rest, progressing to limited attendance may be needed
Information processing speed and ability to handle full workload may be impeded	Mental efforts to prepare and then take tests may worsen symptoms
Excused from team sport practices and athletic activities	No physical activity progresses to limited physical activity

COGNITIVE SYMPTOMS

- ✔ Difficulty concentrating
- ✔ Feeling in a "fog"
- ✔ Confusion
- ✔ Amnesia/difficulty remembering
- ✔ Trouble with learning and memory
- ✔ Problems putting thoughts into words
- ✔ Easily confused
- ✔ Slower thinking, acting, reading, and speaking
- ✔ Easily distracted
- ✔ Trouble multitasking
- ✔ Lack of organization in everyday tasks

PHYSICAL SYMPTOMS

- ✔ Headache
- ✔ Neck pain
- ✔ Slowed reaction time
- ✔ Nausea
- ✔ Lack of Energy
- ✔ Feeling physically and mentally tired
- ✔ Dizziness
- ✔ Balance problems
- ✔ Blurred or double vision
- ✔ Sensitivity to light or noise
- ✔ Ringing in ears
- ✔ Loss of sense of taste or smell
- ✔ Difficult sleeping
- ✔ Loss of consciousness

SOCIAL AND EMOTIONAL SYMPTOMS

- ✔ Mood changes including irritability, anxiousness and tearfulness
- ✔ Decreased motivation
- ✔ Easily overwhelmed
- ✔ More impulsive and disinhibited
- ✔ Withdrawn from social situation

APPENDIX F

RETURN TO PLAY PROTOCOL – Geisinger Sports Medicine

Geisinger Sports Medicine

Concussion –Return to play Protocol

Rational: Return to play(RTP) presents athletic trainers with a standardized series of steps to ensure the safe return of a recovering concussed athlete to field of play. These steps progress the athlete through daily SCATs ensuring the asymptomatic athlete can proceed to the next step of the protocol. Any return of symptoms forces the athlete to return to a previous step till completion. In some more severe cases athlete may restart the protocol again at stage zero.

Protocol:

Stage 0 - Athlete must remain at this stage until all signs and symptoms have been resolved for 24 hours

Stage 1 - Athlete completes a 15 minute bike workout without return of symptoms

Stage 2 - Athlete completes a workout without return of symptoms

Bike Sprint workout - 20 minutes (see following pages)

Treadmill incline workout - 20 minutes (see following pages)

Stage 3 - Athlete completes a workout without return of symptoms

On-field workout (see following pages)

Weightlifting workout (see following pages)

Multi-directional Movement

Stage 4 -Athlete completes a "Stress Test" workout without return of symptoms

Stress Test Option 1 (see following pages)

Stress Test Option 2 (see following pages)

After Stress Test: light/non-contact practice

No hitting in football

No heading in soccer

No live Scrimmage; any sport

No hitting in football

Stage 5 - Athlete completes a full practice with no restrictions

Stage 6 -Release / Return of athlete to full play and competition

Stage 1 - Example 15 minute light bike workout

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

TIME	TENSION	RPM	LEVEL
15 min	1	70 rpm	2
12 min	1	90 rpm	2
10 min	2	70 rpm	3
8 min	2	95 rpm	3
7 min	2	70 rpm	3
5 min	2	100 rpm	3
4 min	3	70 rpm	4
3 min	2	100 rpm	3
2 min	1	70 rpm	2

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 2 - Example – 20 minute Bike sprint workout

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

TIME	TENSION	RPM	LEVEL
20 MIN	2	70 RPM	3
18 MIN	3	80 RPM	4
16 MIN	2	95 RPM	3
15 MIN	3	80 RPM	4
13 MIN	2	95 RPM	3
12 MIN	4	80 RPM	5
10 MIN	2	105 RPM	3
9 MIN	3	80 RPM	4
7 MIN	2	105 RPM	3
6 MIN	3	90 RPM	4
4 MIN	2	80 RPM	3
2 MIN	2	70 RPM	3

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 2 - Example – 20 minute Treadmill incline workout

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

	TIME	SPEED	INCLINE
START	0 – 2	3.0	0.0
	2 – 4	3.5	5.0
	4 – 6	3.5	8.0
	6 – 8	3.5	10.0
	8 – 10	3.5	12.0
	10 – 12	3.0	13.0
	12 – 14	3.0	14.0
	14 – 16	3.0	15.0
	16 – 18	3.0	10.0
	18 – 20	3.0	0.0
END	20	0	0.0

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 3 – Example - On-field workouts

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

5 - 10 mins	jump rope, jogging, running
Traveling Exercises 5 - 10 yards	walking on your toes forward, backward, lateral lunges - forward and backwards walking giant arm swings happy go lucky line touches hop jumps running 360 skipping - forward, backward, lateral
Stationary Exercises 25 reps	push-ups full sit-ups wall ball shots box jumps - low box 6" - 12"
15 - 20 mins	complete sports specific drills
Condition Exercises	300 yd shuttle at different length - 25, 50, or 100 60 yd shuttles Stadium steps

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 3 – Example – Weightlifting workout (about 40 minutes for most athletes)

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available.

- Exercises are grouped in pairs or "super-sets". Little to no rest between sets/exercises. For example: exercises 1, exercise 2, exercise 1, exercise 2
- Rest is allowed while demonstrating next exercise or setting up next exercise.
- Weights used are variable depending of strength and coordination of athlete. Weights should be Moderate 50%-70% of max 1 repetition, enough to elevate blood pressure and break a sweat, but not so much athlete is using improper form.
- All exercises are performed for 15 reps X 2 sets.
- Care or extra spotting must be given to athletes that have never worked out in the weight room.

Exercise(s) pairings:

Seating Rows & Lat Pull-downs

Bicep Curls & Triceps Press-downs

Bench Press & Dumbbell Front Squat(chalice Squat)

Optional pairing -- Lunges & Dumbbell Press

Crunches & Straight Leg Raises

*Optional pairing may be included if time allows or for an athlete that has prior experience in the weight room and progresses through exercises quickly.

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 4 – Example – Stress test #1

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

5 - 10 minutes	jump rope, jogging, running		
Traveling Exercises 5 - 10 yards	walking on your toes forward, backward, lateral lunges - forward and backwards walking giant arm swings happy go lucky line touches hop jumps running 360 skipping - forward, backward, lateral		
15 - 20 minutes	complete sports specific drills		
Circuit Exercise 15 - 20 minutes	Select 5 exercises Complete the following	10x 10x 10x 10x 1x	wall ball shots w/ 12 lb med ball lateral hop over 6" hurdle kettle bell swing w/ 18 lbs plank up/downs 60 yard shuttle
Bonus Exercise	Add one Bonus exercise at the end ... 30x burpees 75x full sit-ups 50x push-ups 5x 50 yds sprint		

**Discontinue any workout that causes a return or increase in concussion symptoms.

Stage 4 – Example – Stress test #2

This is an example only and the athletic trainer conducting this stage may have to modify exercises based on the athlete and equipment available

5 Station Sprint/Jog workouts

- Goal: Conditioning workout (increase blood pressure) with exercises (spike blood pressure) to provide a controlled stress on post concussion athlete.
- Athlete may start off sprinting but allowed to jog as they get tired.
- Exercise repetitions may be varied according to athlete's abilities.
- Must monitor athlete closely in case of symptom(s) return.
- Most athletes' symptoms return with burpee/mtn. climber/burpee combination.
- Workout times to expect: 20+ minutes = Struggling / out of shape athlete
  15-17 minutes = Average Joe / decent shape
  12 minutes or less = Wrestler shape / very good shape

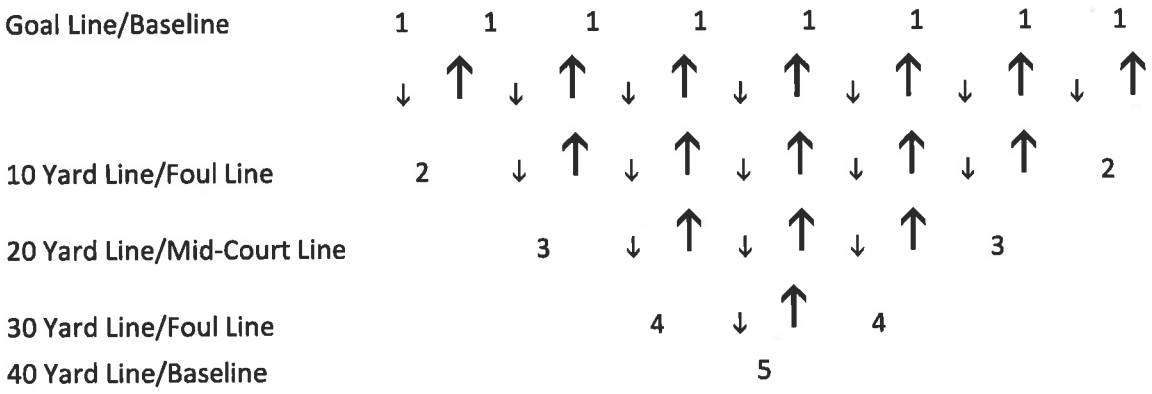
Warm with 5 laps or 5 up and back on length of workout zone / area.

Cooldown with 2 lap jog or 2 up and back on length of workout zone, and finish 2 lap walk.

*Highly encourage walking finishing laps with athlete and discuss workout and any symptoms.

Station Exercises:		
	1. Jumping Jacks	15-20 repetitions
	2. Pushups	15-20 repetitions
	3. Lunges, left and right legs	15-20 repetitions
	4. Burpees	15-20 repetitions
	5. Mountain climbers	30 seconds – 1 minute

Workout zone: Football field, basketball court, or 5 spaced out markers on ground



**Discontinue any workout that causes a return or increase in concussion symptoms.

SPORTS MEDICINE

Communication Protocol for Concussion

1. Athlete experiences injury mechanism and complains of concussion like symptoms. Athletic trainer removes athlete from play and administers sideline evaluation to determine participation status.
2. **Athletic Trainer** administers initial SCAT3 to student-athlete.
3. **Athletic Trainer** provides student-athlete with "2016-2017 Student-Athlete Concussion Information".
4. **Athletic Trainer** provides documentation and scoring of student-athlete's concussion like symptoms to and schedules appointments to be seen by:
    a. Non-surgical Geisinger Bucknell Team Physicians - Dr. Roza, Dr. McElroy, or Dr. Davis for Return to Play.
    b. Medical Director of Bucknell Student Health, Dr. O'Neil for Return to Learn.
5. **Athletic Trainer** provides contact information to the student-athlete and explains services available for:
    a. Counseling & Student Development Center.
    b. Office of Accessibility Resources.

    Athletes must set up their own appointment for accommodations

6. **Physicians** send ".dot" message through EPIC to communicate to the rest of the Sports Medicine Team.
    a. **Geisinger physician** must be signed into Bucknell Sports Medicine Location in Epic
    b. **Geisinger physician** prints out message so Athletic Trainer can fax/email Academic Dean.
    c. **Bucknell Student Health Physician** sends a message to the appropriate Academic Dean.
        i. Athletic Trainer will send notification to appropriate Academic Dean if at least one class period will pass prior to student-athlete seeing a physician.
7. **Athletic Trainer**:
    a. Administers daily SCAT3 symptom score.
    b. Administers Impact once student-athlete is symptom free for 24 hours with being able to complete all academic requirements without accommodations.
    c. Communicates via text or call to the overseeing Team Physician that student-athlete is symptom free and has completed ImPACT.
8. **Physician** reviews ImPACT & communicates to the overseeing Athletic Trainer and Bucknell Student Health physician for one of the following actions:
    a. Continue daily SCAT3 or repeat ImPACT if results are non-comparable to baseline.
    b. Extension for Return to Academics accommodations.
    c. Clearance to begin Geisinger Return to Play Protocol under direct supervision of the Athletic Trainer.

Academic Dean's Offices & Preferred Method of Communication	
Dean of Arts & Sciences	Office: x71302 Fax: x77054 Email Excuse to: Artsandsciences@bucknell.edu
Dean of Engineering	Office x73711 Fax: x73579 Preferred communication of excuse via fax
Dean of Management	Office: x71337 Email excuse to: Leslie Velz: lv006@bucknell.edu