



# NC State University Sports Medicine

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## Concussion Policy & Procedures

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# NC State Concussion Management Procedural Outline

- I. Role Delineation
  - A. Team Physicians
    1. General oversight and approval of the Concussion Management Policy and Procedures
    2. Review of Medical History and Predisposition
    3. Attend all scheduled home competitions for contact/collision sports
    4. Be available for consult during all scheduled practice events for contact/collision sports
    5. Clinical evaluations
    6. Changes to standard care
    7. Sign-off on Disability Service (DSO) with assistance from ATC and Academic Support
    8. Interpretation of ImPACT & C3Logix
    9. Authorization of progression
    10. Release to the Care of the ATC for Return to Play
    11. Referral to various specialist when appropriate
      - a. Neurosurgeons
      - b. Neurologists
      - c. Vestibular Therapist
      - d. Visual Therapist
      - e. Psychiatrist/Psychologist
  - B. Athletic Trainer (ATC)
    1. Implementation of the Concussion Management Policies and Procedures
    2. Education of Athletes, Coaches, and Staff
    3. Review of Medical History and Predisposition
    4. Conduct Baseline Testing
    5. Document care and treatment appropriately
    6. Attend all scheduled competitions for contact/collision sports
    7. Attend or be available for all scheduled practice events for contact/collision sports
    8. Initial Assessment
    9. Immediate Plan of Care
    10. Subsequent Evaluations and Monitoring
    11. Referral to physician and/or appropriate specialist
    12. Follow-up Serial Evaluations
    13. Communication with coaches, appropriate staff, Director of Sports Med, and Team Physicians
    14. Initiate Disability Service (DSO) with help from Academic Support & Team Physician
    15. Referral to various specialist when appropriate
      - a. Vestibular Therapist
      - b. Visual Therapist
      - c. Psychiatrist/Psychologist
    16. Initiation of exertional testing at physician direction
    17. Return to Play following Physician Release
    18. Subsequent Injuries
  - C. Coaches
    1. Acknowledgment of the Concussion Management Policy
    2. Encourage safe play and proper technique
    3. Immediately remove a student-athlete from practice/competition that is suspected to have a concussion and assist the student-athlete in seeking appropriate evaluation by a member of the Sports Medicine Team or EMS
    4. Follow the recommendations of the Sports Medicine Team
    5. Refer to the Sports Medicine Team for updates regarding an athlete's progression

- D. Student Athletes
    1. Provide an accurate medical history to the Sports Medicine Team
    2. Participate within the rules of the game without malicious intent
    3. Report all injuries and illnesses immediately
    4. Assist teammates by reporting injuries when a teammate is in need
    5. Follow the recommendations of the Sports Medicine Team
  - E. Sport Supervisors and Administration
    1. Acknowledgment of the Concussion Management Policy
    2. Adherence to the Interassociation Consensus: Independent Medical Care for College Student-Athletes Best Practices
  - F. Academic Advisor
    1. Acknowledgment of the Concussion Management Policy
    2. Refer to the Sports Medicine Team for updates regarding an athlete's progression
    3. Follow the recommendations of the Sports Medicine Team
    4. Assist in Coordination of DSO
    5. Develop Individual Return To Learn Plans
- II. Assessment Tools (not intended to suggest all tools must be used in baseline testing or assessments)
- A. Symptom Based Testing
    1. SCAT3 or Modified SCAT3
    2. Symptom Evaluation & BESS
    3. C3Logix
  - B. Neuropsychological Assessment
    1. ImPACT
    2. C3Logix
  - C. VOMS Assessment
    1. C3Logix
    2. King-Devick
- III. Education (Written, Online, &/or Verbal)
- A. Initial Team Meeting
  - B. ATC In-Services and Orientation
  - C. Coaches Meeting
  - D. Sport Supervisors Meeting
  - E. NCAA Materials
  - F. Time of Injury
- IV. Baseline Testing/Pre-Participation Testing
- A. Performed during the initial physical process for **all** incoming student-athletes
  - B. Conducted prior to the first potential head injury training session
  - C. Re-Assess Baseline Testing for student-athletes with a concussive episode in the previous 12 months
  - D. Assessment Tools (Minimum of 1 Symptom Based Test and 1 Neuropsychological Assessment)
- V. Injury Assessment: Recognition and Diagnosis
- A. Clinical Assessment of C-Spine/Head Neck Trauma
  - B. Symptom Assessment
  - C. Physical and neurological assessment
  - D. Cognitive assessment
  - E. Balance Exam
- VI. Immediate Plan
- A. Remove student-athlete from practice or competition
    1. Serial Assessments
    2. Observation
  - B. Referral if needed
  - C. Release to a Responsible Adult with Home Care Instructions

VII. Follow-up Plan

- A. Subsequent Evaluations and Monitoring (Symptom Based Testing)
- B. Notify Academic Advisor – Initiate DSO paperwork
- C. Refer to Physician for Evaluation
- D. Refer for targeted treatment plan if indicated
- E. Resolution of Symptoms
- F. Subsequent Evaluation of Neuropsychological Testing
- G. Refer to Physician for Progression (may be after initiating exertional testing)
- H. Exertional Testing
- I. Return to Full Academic Load & Play

VIII. Exertional Testing (substitution of similar activities is permitted)

- A. Progression to Sport Specific and full return
  1. No Activity
    - a. Complete physical and cognitive rest
    - b. Resolution of Symptoms
    - c. Neuropsychological Testing approximates with baseline
    - d. Progress to light aerobic exercise following 16-24 hrs rest while asymptomatic
  2. Light Aerobic Exercise
    - a. Perform Symptom Evaluation
    - b. Walking, swimming, or stationary cycling keeping intensity below 70% of max heart rate; no resistance training
    - c. 10-15 mins in duration
    - d. Perform Symptom Based Testing
    - e. Return to No-Activity if student-athlete experiences a recurrence of symptoms
    - f. Progress to sport specific exercise in an appropriate timeframe
  3. Sport Specific Exercise
    - a. Perform Symptom Evaluation
    - b. Jogging, Shooting drills; Movement with no contact activities
    - c. 10-30 mins in duration
    - d. Perform Symptom Based Testing
    - e. Return to No-Activity if student-athlete experiences a recurrence of symptoms
    - f. Progress to non-contact drills in an appropriate timeframe
  4. Non-Contact Training Drills
    - a. Perform Symptom Evaluation
    - b. Complex training drills; running routes/plays emphasis on coordination and cognitive load
    - c. May implement progressive resistance exercise
    - d. 20-60 mins in duration
    - e. Perform Symptom Based Testing
    - f. Return to No-Activity if student-athlete experiences a recurrence of symptoms
    - g. Progress to full contact practice in an appropriate timeframe
  5. Full contact Practice
    - a. Perform Symptom Evaluation
    - b. Participate in normal training activities
    - c. 20-120 mins in duration
    - d. Perform Symptom Based Testing
    - e. Return to No-Activity if student-athlete experiences a recurrence of symptoms
    - f. Release to return to play in an appropriate timeframe
  6. Return To Play
    - a. Perform Symptom Evaluation
    - b. Return to No-Activity if student-athlete experiences a recurrence of symptoms
    - c. Normal participation and/or game play
- B. Physician Modification Prerogatives
  1. May advance/slow the standard progress
  2. Evaluation for recurrence of symptoms or second insult
  3. Consideration given to modifiers

- IX. Return to Learn
  - A. Implementation of the Return to Learn Management Plan
  - B. Home and classroom modification via DSO and Academic Support
  - C. Gradually progress academic load as tolerated
  - D. Monitor for worsening symptoms – return to physician if needed
  - E. Release to full cognitive load when symptoms resolve
  
- X. Return to Play
  - A. Determined by Physician
  - B. Monitoring
  - C. Re-Assessment if needed
  
- XI. Prevention & Management Strategies
  - A. Education to coaches and student-athletes
  - B. Risk acknowledgement
  - C. Thorough medical history and physical
  - D. Baseline Testing on all Student-Athletes
  - E. Adherence to Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Best Practices
  - F. Adherence to Interassociation Consensus: Year-Round Football Practice Contact Recommendations
  - G. Adherence to Interassociation Consensus: Independent Medical Care for College Student-Athletes Best Practices
  - H. Reducing gratuitous contact during practice
  - I. Taking ‘safety-first’ approach to sport
  - J. Taking the head out of contact
  - K. Proper equipment fitting
  - L. Education on safe play and proper technique
  - M. Adherence to ACC Medical Observer Policy & Procedures
  - N. Expedite access to physicians and other healthcare providers



# NC STATE UNIVERSITY SPORTS MEDICINE

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## Concussion Management Foundation Statement

**In an effort to provide quality standards of care for our student-athletes, NC State University's Sports Medicine Department has established the following foundation statement for the management of concussions. The statements made in this policy are taken from the "Consensus Statement on Concussion in Sport 3rd International Conference on Concussion in Sport Held in Zurich, November 2008" and the "National Athletic Trainers' Association Position Statement: Management of the Sport-Related Concussion, September 2004". Statements have been modified from the original versions of these documents to provide a clear decision between options provided within the original documents or to better explain the adaptation of policy as it pertains specifically to NC State University. Some statements have also been omitted which do not pertain to NC State University. Other statements have been added which directly pertain to NC State University's policy.**

### 1. CONCUSSION

#### 1.1 Definition of Concussion

Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Several common features that incorporate clinical, pathologic and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury include:

1. Concussion may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an "impulsive" force transmitted to the head.
2. Concussion typically results in the rapid onset of short-lived impairment of neurologic function that resolves spontaneously.
3. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.
4. Concussion results in a graded set of clinical symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course; however, it is important to note that, in a small percentage of cases, post-concussive symptoms may be prolonged.
5. No abnormality on standard structural neuro-imaging studies is seen in concussion.

### 2. CONCUSSION EVALUATION

#### 2.1 CONCUSSION ASSESSMENT TOOLS

Sports medicine clinicians are increasingly using standardized methods to obtain a more objective measurement of post-concussion signs and symptom, cognitive dysfunction, and postural instability (All of which are components of C3Logix, SCAT3, BESS and ImPACT). These methods allow the clinician to quantify the severity of injury and measure the player's progress over the course of post-injury recovery. An emerging model of sport concussion assessment involves the use of brief screening tools to evaluate post-concussion signs and symptoms, cognitive functioning, and postural stability on the sideline immediately after a concussion and neuropsychological testing to track recovery further out from the time of injury. Ultimately, these tests, when interpreted with the physical examination and other aspects of the injury evaluation, assist the ATC and other sports medicine professionals in the return to play decision-making process.

#### 2.2 Symptoms and Signs of Acute Concussion

The diagnosis of acute concussion usually involves the assessment of a range of domains including clinical symptoms, physical signs, behavior, balance, sleep and cognition. Furthermore, a detailed concussion history is an important part of the evaluation both in the injured athlete and when conducting a pre-participation examination. The detailed clinical assessment of concussion is outlined in the SCAT3 form and C3Logix.

The suspected diagnosis of concussion can include one or more of the following clinical domains:

- (a) Symptoms: somatic (e.g., headache), cognitive (e.g., feeling like in a fog) and/or emotional symptoms

- (b) Physical signs (e.g., loss of consciousness, amnesia)
- (c) Behavioral changes (e.g., irritability)
- (d) Cognitive impairment (e.g., slowed reaction times)
- (e) Sleep disturbance (e.g., drowsiness)

If any one or more of these components is present, a concussion should be suspected and the appropriate management strategy instituted.

### 2.3 On-field or Sideline Evaluation of Acute Concussion

When a player shows ANY features of a concussion:

- (a) The player should be medically evaluated onsite using standard emergency management principles, and particular attention should be given to excluding a cervical spine injury.
- (b) The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no healthcare provider is available, the player should be safely removed from practice or play and urgent referral to a physician arranged.
- (c) Once the first aid issues are addressed, then an assessment of the concussive injury should be made using the SCAT3 or other similar tool.
- (d) The player should not be left alone following the injury, and serial monitoring for deterioration is essential over the initial few hours following injury.
- (e) A player with diagnosed concussion should not be allowed to return to play on the day of injury. Sufficient time for assessment and adequate facilities should be provided for the appropriate medical assessment both on and off the field for all injured athletes.

Sideline evaluation of cognitive function is an essential component in the assessment of this injury. Brief neuropsychological test batteries that assess attention and memory function have been shown to be practical and effective. Such tests include the Maddocks questions and the Standardized Assessment of Concussion (SAC). Both of these tests are included within the SCAT3 and C3Logix. It is worth noting that standard orientation questions (e.g., time, place) have been shown to be unreliable in the sporting situation when compared with memory assessment. It is recognized, however, that abbreviated testing paradigms are designed for rapid concussion screening on the sidelines and are not meant to replace comprehensive neuropsychological testing which is sensitive to detect subtle deficits that may exist beyond the acute episode nor should they be used as a stand-alone tool for the ongoing management of sports concussions.

It should also be recognized that the appearance of symptoms might be delayed several hours following a concussive episode.

Focal or posttraumatic intracranial mass lesions include subdural hematomas, epidural hematomas, cerebral contusions, and intracerebral hemorrhages and hematomas. These are considered uncommon in sport but are serious injuries; the ATC must be able to detect signs of clinical deterioration or worsening symptoms during serial assessments. Signs and symptoms of these focal vascular emergencies can include LOC, cranial nerve deficits, mental status deterioration, and worsening symptoms. Concern for a significant focal injury should also be raised if these signs or symptoms occur after an initial lucid period in which the athlete seemed normal.

Not every sport-related concussion warrants immediate physician referral, but ATCs must be able to recognize those injuries that require further attention and provide an appropriate referral for advanced care, which may include neuro-imaging. Serial assessments and physician follow-up are important parts of the evaluation of the athlete with a concussion. Referrals should be made to medical personnel with experience managing sport-related concussion. The ATC should monitor vital signs and level of consciousness periodically after a concussion until the athlete's condition stabilizes and improves. The athlete should also be monitored over the next few hours and days after the injury for delayed signs and symptoms and to assess recovery. The "Physician Referral Checklist" is an outline of scenarios that warrant physician referral or, in many cases, transport to the nearest hospital emergency department. The ATC-physician team must also consider referral options to specialists such as neurologists, neurosurgeons, neuropsychologists, and neuro-otologists, depending on the injury severity and situation. Referrals for imaging tests such as CT, MRI, or electronystagmography are also options that sometimes can aid in the diagnosis and/or management of sport-related concussion but are typically used only in

cases involving LOC, severe amnesia, abnormal physical or neurologic findings, or increasing or intensified symptoms.

#### 2.4 Evaluation in the Athletic Training Room or Emergency Room by Medical Personnel

An athlete with concussion may be evaluated in the emergency room or doctor's office as a point of first contact following injury or may have been referred from another care provider. In addition to the points outlined above, the key features of this exam should encompass:

- (a) A medical assessment including a comprehensive history and detailed neurological examination including a thorough assessment of mental status, cognitive functioning and gait and balance.
- (b) A determination of the clinical status of the patient including whether there has been improvement or deterioration since the time of injury. This may involve seeking additional information from parents, coaches, teammates and eyewitness to the injury.
- (c) A determination of the need for emergent neuro-imaging in order to exclude a more severe brain injury involving a structural abnormality.

In large part, these points above are included in the SCAT3 and C3Logix assessment, which forms part of the Zurich consensus statement.

### 3. CONCUSSION INVESTIGATIONS

#### 3.1 Neuro-imaging

Brain CT (or, where available, MR brain scan) contributes little to concussion evaluation but should be employed whenever suspicion of an intra-cerebral structural lesion exists. Examples of such situations may include prolonged disturbance of conscious state, focal neurological deficit or worsening symptoms. Newer structural MRI modalities including gradient echo, perfusion and diffusion imaging have greater sensitivity for structural abnormalities. However, the lack of published studies, as well as absent pre-injury neuro-imaging data, limits the usefulness of this approach in clinical management at the present time. In addition, the predictive value of various MR abnormalities that may be incidentally discovered is not established at the present time. Other imaging modalities such as fMRI demonstrate activation patterns that correlate with symptom severity and recovery in concussion. While not part of routine assessment at the present time, they nevertheless provide additional insight to pathophysiological mechanisms. Alternative imaging technologies (e.g., positron emission tomography, diffusion tensor imaging, magnetic resonance spectroscopy, functional connectivity), while demonstrating some compelling findings, are still at early stages of development and cannot be recommended other than in a research setting. A physician's prescription is required to perform any of the above imaging studies.

#### 3.2 Objective Balance Assessment

Published studies using both sophisticated force plate technology, as well as those using less sophisticated clinical balance tests (e.g., Balance Error Scoring System (BESS)), have identified postural stability deficits lasting approximately 72 hours following sport-related concussion. It appears that postural stability testing provides a useful tool for objectively assessing the motor domain of neurologic functioning and should be considered a reliable and valid addition to the assessment of athletes suffering from concussion, particularly where symptoms or signs indicate a balance component. A modified version of the BESS is included in the SCAT3 and C3Logix.

#### 3.3 Neuropsychological Assessment (ImPACT)

The application of neuropsychological (NP) testing such as ImPACT in concussion has been shown to be of clinical value and continues to contribute significant information in concussion evaluation. Although in most cases cognitive recovery largely overlaps with the time course of symptom recovery, it has been demonstrated that cognitive recovery may occasionally precede or more commonly follow clinical symptom resolution suggesting that the assessment of cognitive function should be an important component in any return to play protocol. It must be emphasized, however, that NP assessment should not be the sole basis of management decisions; rather, it should be seen as an aid to the clinical decision making process in conjunction with a range of clinical domains and investigational results.



Neuropsychologists are in the best position to interpret NP tests by virtue of their background and training. However, there may be situations where neuropsychologists are not available and other medical professionals may perform or interpret NP screening tests. The ultimate return to play decision should remain a medical one in which a multidisciplinary approach, when possible, has been taken. In the absence of NP and other (e.g., formal balance assessment) testing, a more conservative return to play approach may be appropriate.

In the majority of cases, NP testing will be used to assist return to play decisions and will not be done until the patient is symptom free. There may be situations (e.g., child and adolescent athletes) where testing may be performed early whilst the patient is still symptomatic to assist in determining management. This will normally be best determined in consultation with a trained neuropsychologist. Baseline neuropsychological testing is recommended, when possible, to establish a normative level of neurocognitive functioning for individual athletes. Baseline neuropsychological testing typically takes 20 to 30 minutes per athlete.

Sport concussion batteries should include measures of cognitive abilities most susceptible to change after concussion, including attention and concentration, cognitive processing (speed and efficiency), learning and memory, working memory, executive functioning, and verbal fluency. Tests of attention and concentration and memory functioning have been reported as the most sensitive to the acute effects of concussion. The athlete's age, sex, primary language, and level of education should be considered when selecting a test battery.

Neuropsychological testing following a concussion will only be performed after the injured player reports that his or her symptoms are completely gone. This approach is based on the conceptual foundation that an athlete should not participate while symptomatic, regardless of neuropsychological test performance. Unnecessary serial neuropsychological testing, in addition to being burdensome and costly to the athlete and medical staff, also introduces practice effects that may confound the interpretation of performance in subsequent post injury testing sessions.

Measuring "recovery" on neuropsychological tests and other clinical instruments is often a complex statistical matter, further complicated by practice effects and other psychometric dynamics affected by serial testing, even when pre-injury baseline data are available for individual athletes. The use of statistical models that empirically identify meaningful change while controlling for practice effects on serial testing may provide the clinician with the most precise benchmark in determining post injury recovery, above and beyond the simple conclusion that the player is "back to baseline." Further research is required to clarify the guidelines for determining and tracking recovery on specific measures after concussion. The clinician should also be aware that any concussion assessment tool, either brief screening instruments or more extensive neuropsychological testing, comes with some degree of risk for false negatives (e.g., a player performs within what would be considered the normal range on the measure before actually reaching a complete clinical recovery after concussion). Therefore, test results should always be interpreted in the context of all clinical information, including the player's medical history. Also, caution should be exercised in neuropsychological test interpretation when pre-injury baseline data do not exist. Numerous factors apart from the direct effects of concussion can influence test performance (Table 1).

**Table 1. Factors Influencing Neuropsychological Test Performance**

Previous concussions	Medications, alcohol, or drugs
Educational background	Psychiatric disorders
Pre-injury level of cognitive functioning	Learning disability
Cultural background	Attention deficit/hyperactivity
Age	Certain medical conditions
Test anxiety	Primary language other than English
Distractions	Previous neuropsychological testing
Sleep deprivation	

#### 4. CONCUSSION MANAGEMENT

The cornerstone of concussion management is physical and cognitive rest until symptoms resolve and then a graded program of exertion prior to medical clearance and return to play. The recovery and

outcome of this injury may be modified by a number of factors that may require more sophisticated management strategies. These are outlined in the section on modifiers below.

The majority of concussions will recover spontaneously over several days. In these situations, it is expected that an athlete will proceed progressively through a stepwise return to play strategy. During this period of recovery, while symptomatically following an injury, it is important to emphasize to the athlete that physical AND cognitive rest is required. Activities that require concentration and attention (e.g., scholastic work, videogames, text messaging, etc.) may exacerbate symptoms and possibly delay recovery. In such cases, apart from limiting relevant physical and cognitive activities (and other risk-taking opportunities for re-injury), while symptomatic, no further intervention is required during the period of recovery, and the athlete typically resumes sport without further problem.

The ATC must recognize that no 2 concussions are identical and that the resulting symptoms can be very different, depending on the force of the blow to the head, the degree of metabolic dysfunction, the tissue damage and duration of time needed to recover, the number of previous concussions, and the time between injuries. All these factors must be considered when managing an athlete suffering from cerebral concussion.

The two most recognizable signs of a concussion are LOC and amnesia; yet, as previously mentioned, neither is required for an injury to be classified as a concussion. A 2000 study of 1003 concussions sustained by high school and collegiate football players revealed that LOC and amnesia presented infrequently, 9% and 27% of all cases, respectively, whereas other signs and symptoms, such as headache, dizziness, confusion, disorientation, and blurred vision, were much more common.

It has been suggested that LOC and amnesia, especially when prolonged, should not be ignored, but evidence for their usefulness in establishing return to play guidelines is scarce. Loss of consciousness, whether it occurs immediately or after an initially lucid interval, is important in that it may signify a more serious vascular brain injury.

#### 4.1 Grading Scales

Although it is common practice to use a grading scale on a wide variety of injuries, it is purely speculative to grade a concussion based on the initial assessment. In many cases, signs and symptoms may linger for a much longer time than might be expected based on their severity during initial evaluation. Grading is likely to be more important for treating subsequent injuries rather than for the progression of the current injury. Determining/grading the severity of the concussion should be avoided until the symptoms have resolved and return to play has been authorized.

#### 4.2 Home Care

Once it has been determined that a concussion has been sustained, a decision must be made as to whether the athlete can return home or should be considered for overnight observation or admission to the hospital. If the athlete is allowed to return home or to the dormitory room, the ATC should counsel a responsible friend, teammate, or parent to closely monitor the athlete. The teammate, parent, or friend must understand that the athlete should not be left alone.

A concussion instruction form (Post-Concussion Take Home Instructions) should be given to the athlete and a responsible adult who will have direct contact with the athlete for the initial 24 hours after the injury. This form outlines signs and symptoms to watch for and provides useful recommendations on follow-up care. It should also suggest avoiding activities that may increase symptoms (e.g., staying up late studying and physical education class) and should denote resuming normal activities of daily living, such as attending class and driving, once symptoms begin to resolve or decrease in severity.

Traditionally, part of these instructions included a recommendation to wake up the athlete every 3 to 4 hours during the night to evaluate changes in symptoms and rule out the possibility of an intracranial bleed, such as a subdural hematoma. This recommendation has raised some debate about unnecessary wake-ups that disrupt the athlete's sleep pattern and may increase symptoms the next day because of the combined effects of the injury and sleep deprivation. Serial monitoring during sleep is best performed in a hospital setting. If signs of deterioration are present or suspected, the athlete should be referred to the emergency room for observation.

### 4.3 Diet

Evidence is limited to support the best type of diet for aiding in the recovery process after a concussion. A cascade of neurochemical, ionic, and metabolic changes occur after brain injury. Furthermore, some areas of the brain demonstrate glycolytic increases and go into a state of metabolic depression as a result of decreases in both glucose and oxidative metabolism with a reduction in cerebral blood flow. Some studies have suggested that severely brain-injured subjects unknowingly ate larger meals and increased their daily caloric intake when compared with controls. This may suggest the brain increases caloric intake to assist recovery. Although limited information is available regarding the recommended diet for the management of concussion, it is well accepted that athletes should be instructed to avoid alcohol, illicit drugs, and central nervous system medications that may interfere with cognitive function. A normal, well-balanced diet should be maintained to provide the needed nutrients to aid in the recovery process from the injury.

### 4.4 Graduated Return to Play Protocol

Return to play protocol following a concussion follows a stepwise process as outlined in Table 2. With this stepwise progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. A rest period of 16-24 hours should be given between stages to achieve a goal of 8 hours of sleep/recovery. If any post-concussion symptoms occur while in the stepwise program, then the patient should drop back to the beginning of the Graduated Return to Play Protocol and try to progress again after a further 16-24-hour asymptomatic period of rest has passed. This progression may be altered/prolonged for athletes who are withheld for several weeks compared with those athletes withheld for just a few days. It is highly recommended that this progression be followed when any of the modifying factors listed in section 5 of this document are conditional to the individual. Any changes to this progression must be approved by the team physician.

**TABLE 2. Graduated Return to Play Protocol**

<b>Rehabilitation Stage</b>	<b>Functional Exercise</b>	<b>Objective of Each Stage</b>
1. No Activity	Complete physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% MPPHR; no resistance training	Increased HR
3. Sport-specific exercise	Skating drills, running drills, no head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, e.g., Passing drills; may start progressive resistance training	Exercise, coordination, and cognitive load
5. Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

### 4.5 Individualized Assessment and Return to Play

With adult athletes, in some settings, where there are team physicians experienced in concussion management and sufficient resources (e.g., access to neurosurgeons, consultants, neuro-imaging, etc.), as well as access to immediate (ie, sideline) neuro-cognitive assessment, return to play management may be more rapid. The return to play strategy must still follow the same basic management principles, namely, full clinical and cognitive recovery before consideration of return to play. This approach is supported by published guidelines, such as the American Academy of Neurology, US Team Physician Consensus Statement, and US National Athletic Trainers' Association Position Statement. There is data, however, demonstrating that, at the collegiate and high school level, athletes allowed to return to play on the same day may demonstrate NP deficits post-injury that may not be evident on the sidelines and are more likely to have delayed onset of symptoms. It should be emphasized, however, that the young (<18) elite athlete should be treated more conservatively even though the resources may be the same as an older professional athlete. (See section 6.1.) A team physician will have sole authority to utilize a more rapid return to play guideline.

Many return to play guidelines call for the athlete to be symptom free for at least 7 days before returning to participation after a grade 1 or 2 concussion. Although many clinicians deviate from these recommendations and are more liberal in making return to play decisions, recent studies by Guskiewicz

and McCrea et al suggest that perhaps the 7-day waiting period can minimize the risk of recurrent injury. On average, athletes required 7 days to fully recover after concussion. Same-season repeat injuries typically take place within a short window of time, 7 to 10 days after the first concussion, supporting the concept that there may be increased neuronal vulnerability or blood-flow changes during that time, similar to those reported by Giza, Hovda, et al in animal models.

Returning an athlete to participation should follow a progression that begins once the athlete is completely symptom free. All signs and symptoms should be evaluated using a graded symptom scale or checklist (described in ‘‘Concussion Assessment Tools’’) when performing follow-up assessments and should be evaluated both at rest and after exertional maneuvers such as biking, jogging, sit-ups, and push-ups. Baseline measurements of neuropsychological and postural stability are strongly recommended for comparing with post-injury measurements.

If these exertional tests do not produce symptoms, either acutely or in delayed fashion, the athlete can then participate in sport-specific skills that allow return to practice but should remain out of any activities that put him or her at risk for recurrent head injury. For the basketball player, this may include shooting baskets or participating in a walk-thru, and for the soccer player, this may include dribbling or shooting drills or other sport-specific activities. These restricted and monitored activities should be continued for the first few days after becoming symptom free. The athlete should be monitored periodically throughout and after these sessions to determine if any symptoms develop or increase in intensity. Before returning to full contact participation, the athlete should be reassessed using neuropsychological and postural-stability tests if available. If all scores have returned to baseline or better, return to full participation can be considered after further clinical evaluation. It is strongly recommended that after recurrent injury, especially within-season repeat injuries, the athlete be withheld for an extended period of time (approximately 7 days) after symptoms have resolved.

#### 4.6 Psychological Management and Mental Health Issues

In addition, psychological approaches may have potential application in this injury, particularly with the modifiers listed below. Care givers are also encouraged to evaluate the concussed athlete for affective symptoms such as depression, as these symptoms may be common in concussed athletes.

#### 4.7 The Role of Pharmacological Therapy

Pharmacological therapy in sports concussion may be applied in two distinct situations. The first of these situations is the management of specific prolonged symptoms (e.g., sleep disturbance, anxiety, etc.). The second situation is where drug therapy is used to modify the underlying pathophysiology of the condition with the aim of shortening the duration of the concussion symptoms. In broad terms, this approach to management should be only considered by clinicians experienced in concussion management.

It has been suggested that concussed athletes avoid medications containing aspirin or non-steroidal anti-inflammatories. These medications decrease platelet function and potentially increase intracranial bleeding, mask the severity and duration of symptoms, and possibly lead to a more severe injury. It is also recommended that acetaminophen (Tylenol, McNeil Consumer & Specialty Pharmaceuticals, Fort Washington, PA) be used sparingly in the treatment of headache-like symptoms in the athlete with a concussion. Other substances to avoid during the acute post-concussion period include those that adversely affect central nervous function, in particular alcohol and narcotics.

An important consideration in return to play is that concussed athletes should not only be symptom free but also should not be taking any pharmacological agents/medications (e.g. Tylenol) that may mask or modify the symptoms of concussion. Where antidepressant therapy may be commenced during the management of a concussion, the decision to return to play while still on such medication must be considered carefully by the treating clinician.

#### 4.8 The Role of Pre-participation Concussion Evaluation

Recognizing the importance of a concussion history, and appreciating the fact that many athletes will not recognize all the concussions they may have suffered in the past, a detailed concussion history is of value. Such a history may pre-identify athletes that fit into a high risk category and provides an opportunity for the healthcare provider to educate the athlete in regard to the significance of concussive injury. A structured concussion history should include specific questions as to previous symptoms of a concussion,

not just the perceived number of past concussions. It is also worth noting that dependence upon the recall of concussive injuries by teammates or coaches has been demonstrated to be unreliable. The clinical history should also include information about all previous head, face or cervical spine injuries, as these may also have clinical relevance. It is worth emphasizing that, in the setting of maxillofacial and cervical spine injuries, coexistent concussive injuries may be missed unless specifically assessed. Questions pertaining to disproportionate impact versus symptom severity matching may alert the clinician to a progressively increasing vulnerability to injury. As part of the clinical history it is advised that details regarding protective equipment employed at time of injury be sought, both for recent and remote injuries. The benefit a comprehensive pre-participation concussion evaluation allows for modification and optimization of protective behavior and is an opportunity for education.

Data from objective measures of cognitive functioning, postural stability, and post-concussion signs and symptoms are most helpful in making a determination about severity of injury and post-injury recovery when pre-injury baseline data for an individual athlete are available. Baseline testing provides an indicator of what is “normal” for that particular athlete while also establishing the most accurate and reliable benchmark against which post-injury results can be compared.

It is important to obtain a baseline symptom assessment in addition to baseline cognitive and other ability testing. Without baseline measures, the athlete’s post-injury performance on neuropsychological testing and other concussion assessment measures must be interpreted by comparison with available population normative values, which ideally are based on a large sample of the representative population. Normative data for competitive athletes on computerized neuropsychological tests and other concussion assessment measures are now more readily available from large-scale research studies, but baseline data on an individual athlete still provide the greatest clinical accuracy in interpreting post-injury test results. When performing baseline testing, a suitable testing environment eliminates all distractions that could alter the baseline performance and enhances the likelihood that all athletes are providing maximal effort. Most important, all evaluators should be aware of a test’s user requirements and be appropriately trained in the standardized instructions for test administration and scoring before embarking on baseline testing or adopting a concussion testing paradigm for clinical use. Several models exist for implementing baseline testing. Ideally, preseason baseline testing is conducted before athletes are exposed to the risk of concussion during sport participation. Some programs choose to conduct baseline testing as part of the pre-participation physical examination process. In this model, stations are established for various testing methods (e.g., history collection, symptom assessment, neuropsychological testing, and balance testing), and athletes complete the evaluation sequence after being seen by the attending physician or ATC. This approach has the advantage of testing large groups of athletes in 1 session, while they are already in the mindset of undergoing a preseason physical examination.

Collecting histories on individual athletes is also a vital part of baseline testing, especially in establishing whether the athlete has any history of concussion, neurologic disorder, or other remarkable medical conditions. Specifically with respect to concussion, it is important to establish (1) whether the player has any history of concussions and, if so, how many and (2) injury characteristics of previous concussions (e.g., LOC, amnesia, symptoms, recovery time, time lost from participation, and medical treatment). For athletes with a history of multiple concussions, it is also important to clarify any apparent pattern of (1) concussions occurring as a result of lighter impacts, (2) concussions occurring closer together in time, (3) a lengthier recovery time with successive concussions, and (4) a less complete recovery with each injury. Documenting a history of attentional disorders, learning disability, or other cognitive development disorders is also critical, especially in interpreting an individual player’s baseline and post-injury performance on neuropsychological testing. If resources do not allow for preseason examinations in all athletes, at least a concerted effort to evaluate those athletes with a previous history of concussion should be made because of the awareness of increased risk for subsequent concussions in this group.

## 5. MODIFYING FACTORS IN CONCUSSION MANAGEMENT

The consensus panel agreed that a range of “modifying” factors may influence the investigation and management of concussion and in some cases may predict the potential for prolonged or persistent symptoms. These modifiers would also be important to consider in a detailed concussion history and are outlined in Table 3.

**Table 3: Concussion Modifiers**

<b>Factors</b>	<b>Modifier</b>
Symptoms	Number Duration (>10) Severity
Signs	Prolonged LOC (>1min), amnesia
Sequelae	Concussive convulsions
Temporal	Frequency – repeated concussions over time Timing – injuries close together in time Recent history – recent concussion or TBI
Threshold	Repeated concussions occurring with progressively less impact force or slower recovery after each successive concussion
Age	Child and adolescent (<18 years old)
Co-and Pre-morbidities	Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), sleep disorders
Medication	Psychoactive drugs, anticoagulants
Behavior	Dangerous style of play
Sport	High-risk activity, contact and collision sport, high sporting level

In this setting, there may be additional management considerations beyond simple return to play advice. There may be a more important role for additional investigations including formal NP testing, balance assessment, and neuro-imaging. It is envisioned that athletes with such modifying features would be managed in a multidisciplinary manner coordinated by a physician with specific expertise in the management of concussive injury.

The role of female gender as a possible modifier in the management of concussion was discussed at length by the panel. There was not unanimous agreement that the current published research evidence is conclusive that this should be included as a modifying factor, although it was accepted that gender may be a risk factor for injury and/or influence injury severity.

#### 5.1 The Significance of Loss of Consciousness (LOC)

In the overall management of moderate to severe traumatic brain injury, duration of LOC is an acknowledged predictor of outcome. While published findings in concussion describe LOC associated with specific early cognitive deficits, it has not been noted as a measure of injury severity. Consensus discussion determined that prolonged (<1 minute duration) LOC would be considered as a factor that may modify management.

#### 5.2 The Significance of Amnesia and Other Symptoms

There is renewed interest in the role of post-traumatic amnesia and its role as a surrogate measure of injury severity. Published evidence suggests that the nature, burden and duration of the clinical post-concussive symptoms may be more important than the presence or duration of amnesia alone. Further, it must be noted that retrograde amnesia varies with the time of measurement post-injury and hence is poorly reflective of injury severity.

#### 5.3 Motor and Convulsive Phenomena

A variety of immediate motor phenomena (e.g., tonic posturing) or convulsive movements may accompany a concussion.

Although dramatic, these clinical features are generally benign and require no specific management beyond the standard treatment of the underlying concussive injury.

#### 5.4 Depression

Mental health issues (such as depression) have been reported as a long-term consequence of traumatic brain injury including sports related concussion. Neuro-imaging studies using fMRI suggest that a depressed mood following concussion may reflect an underlying pathophysiological abnormality consistent with a limbic-frontal model of depression.

## 6. SPECIAL POPULATIONS

### 6.1 Elite vs. Non-Elite Athletes

The panel unanimously agreed that all athletes, regardless of level of participation, should be managed using the same treatment and return to play paradigm. A more useful construct was agreed whereby the available resources and expertise in concussion evaluation were of more importance in determining management than a separation between elite and non-elite athlete management. Although formal baseline NP screening may be beyond the resources of many sports or individuals, it is recommended that in all organized high-risk sports consideration be given to having this cognitive evaluation regardless of the age or level of performance.

### 6.2 Chronic Traumatic Brain Injury

Epidemiological studies have suggested an association between repeated sports concussions during a career and late life cognitive impairment. Similarly, case reports have noted anecdotal cases where neuro-pathological evidence of chronic traumatic encephalopathy was observed in retired football players. Panel discussion was held, and no consensus was reached on the significance of such observations at this stage. Clinicians need to be mindful of the potential for long-term problems in the management of all athletes.

## 7. DISQUALIFYING THE STUDENT-ATHLETE

### 7.1 Disqualifying for the Season

Guidelines from Cantu and the American Academy of Neurology both recommend termination of the season after the third concussion within the same season. The decision is more difficult if one of the injuries was more severe or was a severe injury resulting from a minimal blow, suggesting that the athlete's brain may be at particular risk for recurrent injury. In addition, because many athletes participate in year-round activities, once they are disqualified for the "season," it may be difficult to determine at what point they can resume contact play. Other issues without clear-cut answers in the literature are when to disqualify an athlete who has not been rendered unconscious and whose symptoms cleared rapidly or one who suffered multiple mild to moderate concussions throughout the career and whether youth athletes should be treated differently for initial and recurrent concussive injuries.

In any case, the inability to resolve symptoms or the return of symptoms will preclude any return to play decisions. Additionally, persistent symptoms may provoke a consideration into acquiring a medical hardship or permanent disqualification.

To qualify for a medical hardship, certain parameters must be met. An accurate description of these parameters can be found within the NCAA Division I Bylaw 14.2.4. As of 2010, both of the following criteria must be met: 1) The student-athlete must not have competed in more than 30% of the team's scheduled contests, and 2) The student-athlete must not have competed in an event during the second half of the team's championship segment.

### 7.2 Disqualifying for the Career

When to disqualify an athlete for a career is a more difficult question to answer. The duration of symptoms may be a better criterion as to when to disqualify an athlete for the season or longer. Merrill Hoge, Eric Lindros, Chris Miller, Al Toon, and Steve Young provide highly publicized cases of athletes sustaining multiple concussions with recurrent or post-concussion signs and symptoms that lasted for lengthy periods of time.

Once an athlete has suffered a concussion, he or she is at increased risk for subsequent head injuries. Guskiewicz et al found that collegiate athletes had a 3-fold greater risk of suffering a concussion if they had sustained 3 or more previous concussions in a 7-year period and that players with 2 or more previous concussions required a longer time for total symptom resolution after subsequent injuries. Players also had a 3-fold greater risk for subsequent concussions in the same season, whereas recurrent, in-season injuries occurred within 10 days of the initial injury 92% of the time. In a similar study of high school athletes, Collins et al found that athletes with 3 or more prior concussions were at an increased risk of experiencing LOC (8-fold greater risk), anterograde amnesia (5.5-fold greater risk), and confusion (5.1-fold greater risk) after subsequent concussion. Despite the increasing body of literature on this topic,

debate still surrounds the question of how many concussions are enough to recommend ending the player's career. Some research suggests that the magic number may be 3 concussions in a career. Although these findings are important, they should be carefully interpreted because concussions present in varying degrees of severity, and all athletes do not respond in the same way to concussive insults. Most important is that these data provide evidence for exercising caution when managing younger athletes with concussion and athletes with a history of previous concussions.

Disqualification is often an emotional and traumatic event in the life of a student-athlete. The decision will be made by the team physicians in consultation with the Director of Sports Medicine when it is determined that the student-athlete is at an unacceptable level of risk for permanent consequences as a result of participation or exertion. Once a decision is made to disqualify the student-athlete, a formal meeting should take place to discuss and explain the rationale for disqualification.

## 8. INJURY PREVENTION

### 8.1 Protective Equipment – Helmets and Headgear

Biomechanical studies have shown a reduction in impact forces to the brain with the use of head gear and helmets, but these findings have not been translated to show a reduction in concussion incidence.

Although wearing a helmet will not prevent all head injuries, a properly fitted helmet for certain sports reduces the risk of such injuries. A poorly fitted helmet is limited in the amount of protection it can provide, and the ATC must play a role in enforcing the proper fitting and use of the helmet. Protective sport helmets are designed primarily to prevent catastrophic injuries (ie, skull fractures and intracranial hematomas) and are not designed to prevent concussions. A helmet that protects the head from a skull fracture does not adequately prevent the rotational and shearing forces that lead to many concussions. The National Collegiate Athletic Association requires helmets be worn for the following sports: baseball, field hockey (goalkeepers only), football, ice hockey, women's lacrosse (goalkeepers only), men's lacrosse, and skiing. Helmets are also recommended for recreational sports such as bicycling, skiing, mountain biking, roller and inline skating, and speed skating. Headgear standards are established and tested by the National Operating Committee on Standards for Athletic Equipment and the American Society for Testing and Materials.

More recently, the issue of headgear for soccer players has received much attention. Although several soccer organizations and governing bodies have approved the use of protective headbands in soccer, no published, peer-reviewed studies support their use. Recommendations supporting the use and performance of headgear for soccer are limited by a critical gap in biomechanical information about head impacts in the sport of soccer. Without data linking the severity and type of impacts and the clinical sequelae of single and repeated impacts, specifications for soccer headgear cannot be established scientifically. These types of headgear may reduce the "sting" of a head impact, yet they likely do not meet other sports headgear performance standards. This type of headgear may actually increase the incidence of injury. Players wearing headgear may have the false impression that the headgear will protect them during more aggressive play and thereby subject themselves to even more severe impacts that may not be attenuated by the headgear.

### 8.2 Protective Equipment – Mouth Guards

The wearing of a mouth guard is thought by some to provide additional protection for the athlete against concussion by either reducing the risk of injury or reducing the severity of the injury itself. Mouth guards aid in the separation between the head of the condyle of the mandible and the base of the skull. It is thought that wearing an improperly fitted mouth guard or none at all increases this contact point. This theory, which is based on Newtonian laws of physics, suggests that the increased separation between 2 adjacent structures increases the time to contact, thus decreasing the amount of contact and decreasing the trauma done to the brain. However, no biomechanical studies support the theory that the increased separation results in less force being delivered to the brain.

High school football and National Collegiate Athletic Association football rules mandate the wearing of a mouth guard, but the National Football League rulebook does not require players to wear a mouth guard. The National Collegiate Athletic Association requires mouth guards to be worn by all athletes in football, field hockey, ice hockey, and lacrosse. Researchers have found no advantage in wearing a custom-made mouth guard over a boil-and-bite mouth guard to reduce the rise of cerebral concussion in athletes.



### 8.3 Risk Compensation

An important consideration in the use of protective equipment is the concept of risk compensation. This is where the use of protective equipment results in behavioral change such as the adoption of more dangerous playing techniques, which can result in a paradoxical increase in injury rates from a false sense of security.

### 8.4 Aggression vs. Violence in Sport

The competitive/aggressive nature of sport which makes it fun to play and watch should not be discouraged. However, sporting organizations should be encouraged to address violence that may increase concussion risk. Fair play and respect should be supported as key elements of sport.

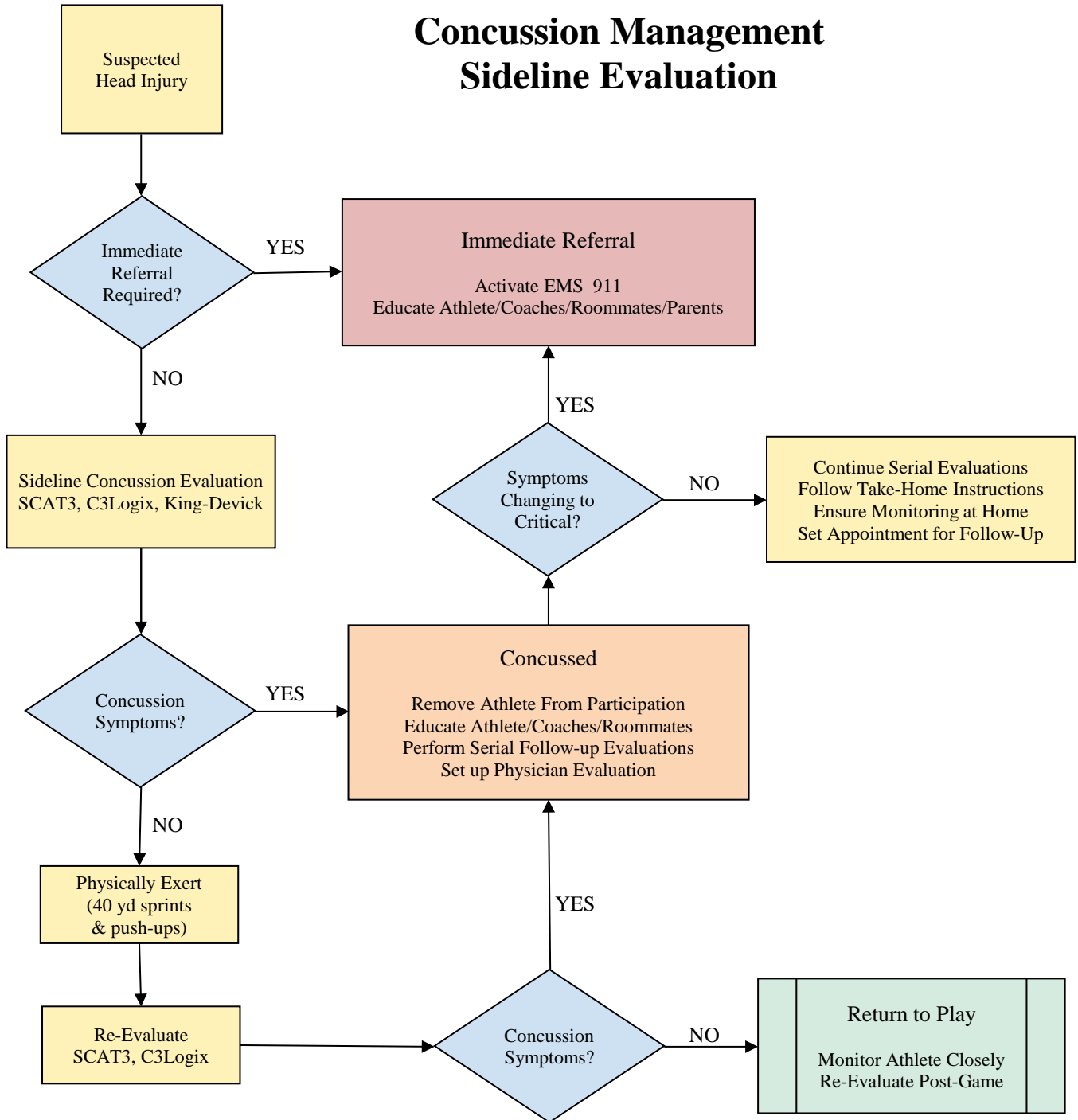
## 9. KNOWLEDGE TRANSFER

As the ability to treat or reduce the effects of concussive injury after the event is minimal, education of athletes, colleagues and the general public is a mainstay of progress in this field. Athletes, referees, administrators, parents, coaches and health care providers must be educated regarding the detection of concussion, its clinical features, assessment techniques and principles of safe return to play. Methods to improve education including web-based resources, educational videos and international outreach programs are important in delivering the message. In addition, concussion working groups, plus the support and endorsement of enlightened sport groups such as Fédération Internationale de Football Association (FIFA), International Olympic Commission (IOC), International Rugby Board (IRB) and International Ice Hockey Federation (IIHF) who initiated this endeavor, have enormous value and must be pursued vigorously. Fair play and respect for opponents are ethical values that should be encouraged in all sports and sporting associations. Similarly, coaches, parents and managers play an important part in ensuring these values are implemented on the field of play.

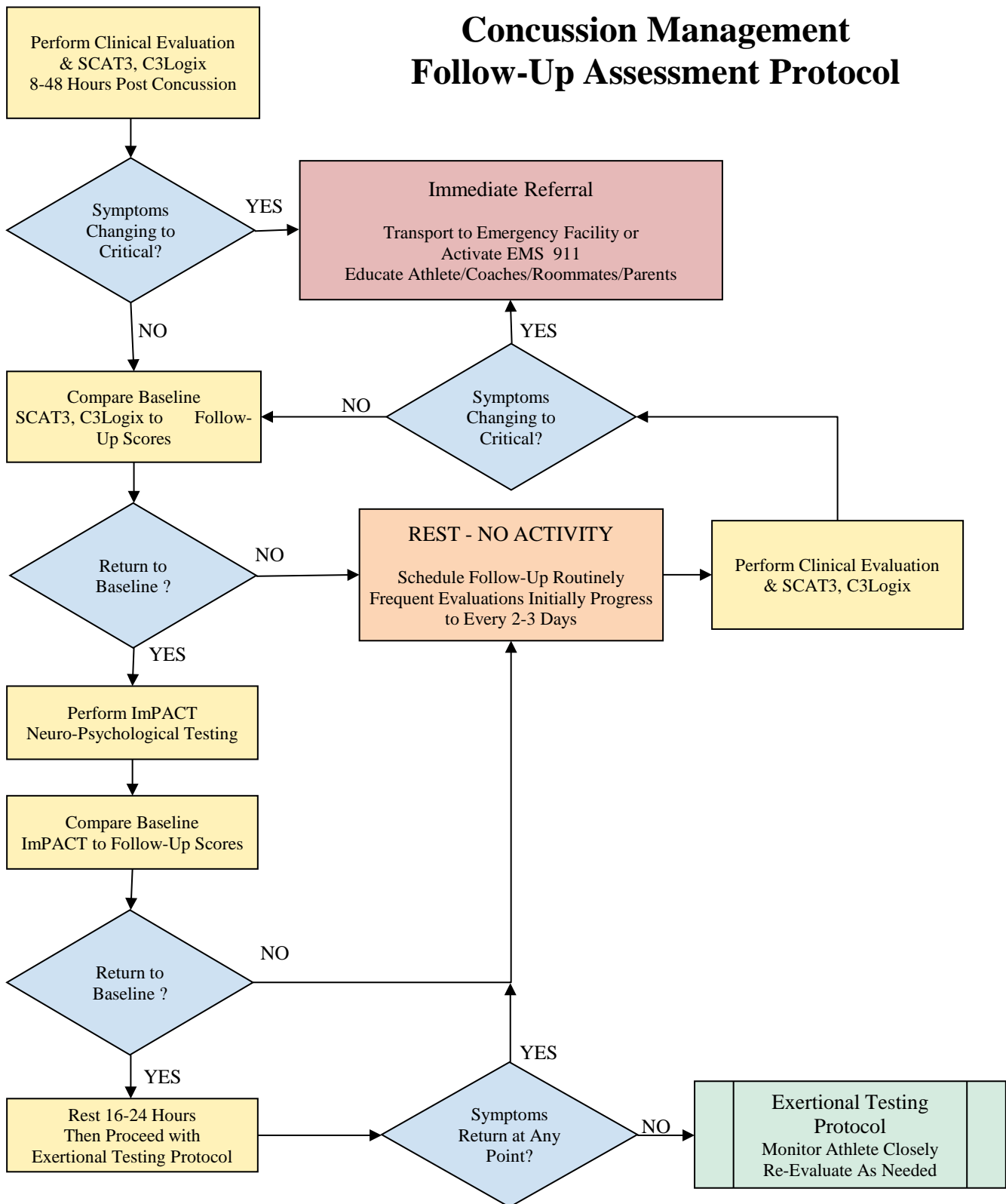
## 10. MEDICAL LEGAL CONSIDERATIONS

This consensus document reflects the current state of knowledge and will need to be modified according to the development of new knowledge. It provides an overview of issues that may be of importance to healthcare providers involved in the management of sports related concussion. It is not intended as a standard of care and should not be interpreted as such. This document is only a guide and is of a general nature consistent with the reasonable practice of a healthcare professional. Individual treatment will depend on the facts and circumstances specific to each individual case.

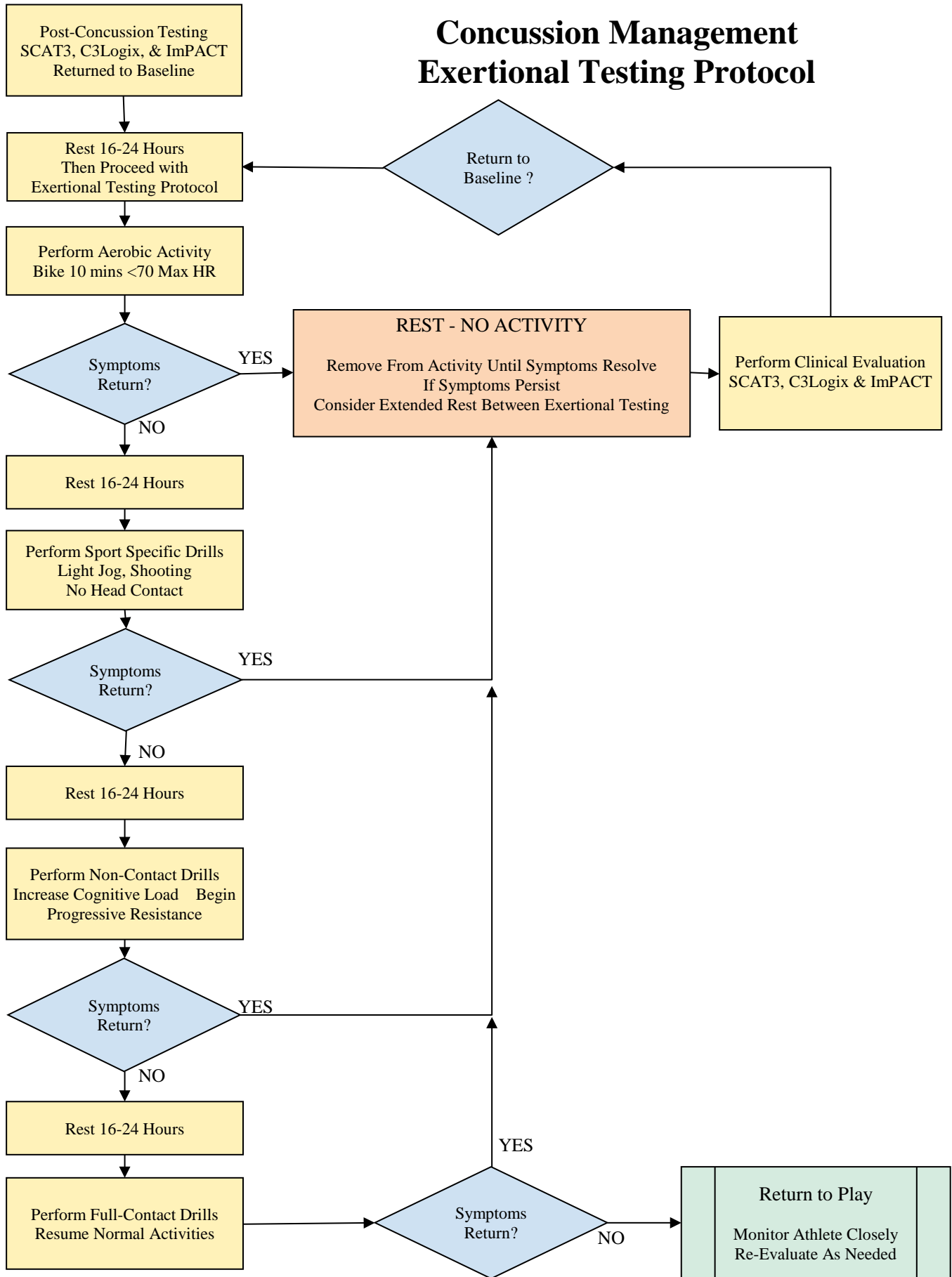
# Concussion Management Sideline Evaluation



# Concussion Management Follow-Up Assessment Protocol



# Concussion Management Exertional Testing Protocol





# Concussion Management Physician Referral Checklist

## Immediate Referral

1. Glasgow Coma Scale <13
2. Prolonged loss of consciousness
3. Deterioration of neurologic function
4. Focal neurological deficit suggesting intracranial trauma
5. Persistently diminished/worsening mental status or other neurological signs/symptoms
6. Decrease or irregularity in respirations
7. Decrease or irregularity in pulse
8. Repetitive vomiting
9. Unequal, dilated, or un-reactive pupils
10. Cranial nerve deficits
11. Any signs or symptoms of associated injuries, spine or skull fracture, or bleeding
12. Mental status changes: lethargy, difficulty maintaining arousal, confusion, or agitation
13. Seizure activity/posturing

## Sub-Acute Referral

1. Loss of consciousness on the field
2. Amnesia lasting longer than 15 min
3. Increase in blood pressure
4. Vomiting
5. Motor deficits subsequent to initial on-field assessment
6. Sensory deficits subsequent to initial on-field assessment
7. Balance deficits subsequent to initial on-field assessment
8. Cranial nerve deficits subsequent to initial on-field assessment
9. Post-concussion symptoms that worsen
10. Additional post-concussion symptoms as compared with those on the field
11. Post-concussion symptoms worsen or do not improve over time
12. Post-concussion symptoms begin to interfere with the athlete's daily activities (ie, sleep disturbances)



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:  
 "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

### Eye Exam

Equal Pupils  WNL  Abnormal  
 Reactive Pupils  WNL  Abnormal  
 Tracking  WNL  Abnormal  
 Nystagmus  WNL  Abnormal  
 Accuity  WNL  Abnormal

### Cranial Nerves Special Tests

Smile Big  WNL  Abnormal  
 Facial Sensation  WNL  Abnormal  
 Hearing  WNL  Abnormal  
 Swallow  WNL  Abnormal  
 Shoulder Shrug  WNL  Abnormal  
 Stick Out Tongue  WNL  Abnormal

## 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

## Maddocks Score<sup>3</sup>

"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

## 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			
<b>SAC Total</b>			
BESS (total errors)			
Tandem Gait (seconds)			
Coordination of 1			

## Cognitive assessment

### Standardized Assessment of Concussion (SAC)<sup>4</sup>

#### 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	candle	baby	finger
apple	0	1	0	1	paper	monkey	penny
carpet	0	1	0	1	sugar	perfume	blanket
saddle	0	1	0	1	sandwich	sunset	lemon
bubble	0	1	0	1	wagon	iron	insect

**Total** of 15

**Immediate memory score total** of 15

#### Concentration: Digits Backward

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

**Total of 4** of 4

#### 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

## Neck Examination:

Palpation      Range of motion      Upper and lower limb sensation & strength

**Findings:** \_\_\_\_\_

## Balance examination

### 20-second trials

Do one or both of the following tests.

Footwear (shoes, barefoot, braces, tape, etc.) \_\_\_\_\_

#### Modified Balance Error Scoring System (BESS) testing<sup>5</sup>

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

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

#### types of errors

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

## Coordination examination

### Upper limb coordination

Which arm was tested:  Left  Right

**Coordination score** of 1

## SAC Delayed Recall<sup>4</sup>

**Delayed recall score** of 5



# Post-Concussion Take Home Instructions

I believe that \_\_\_\_\_ sustained a concussion or direct contact to the head on \_\_\_\_\_. This is a potentially a dangerous or even life threatening situation

To make sure he/she recovers, please follow the following important recommendations:

1. Please **remind** him/her to report to the athletic training room tomorrow at \_\_\_\_\_ for a follow-up evaluation.
2. Please **review** the items outlined on the enclosed **Symptom Checklist**. If any of these problems develop prior to his/her visit, please call \_\_\_\_\_ at \_\_\_\_\_ or contact the local emergency medical system at 911 if you feel that it is an emergency. Otherwise, please follow the instructions outlined below.

**It is OK to:**

- Go to sleep
- Use acetaminophen (Tylenol) for headaches
- Use ice pack on head and neck as needed for comfort
- Eat a normal diet
- To miss school temporarily – Check with DSO

- Avoid** strenuous mental tasks
- Avoid** text messaging and video games

**There is NO need to:**

- Check eyes with flashlight
- Wake up every hour
- Stay in bed

- Do NOT** use Advil, Ibuprofen, Aleve, or aspirin
- Do NOT** drink alcohol
- Do NOT** take pain killers or tranquilizers
- Do NOT** eat spicy foods
- Do NOT** drive until symptoms resolve
- Do NOT** exercise or perform exertional activity

Specific recommendations: \_\_\_\_\_

Recommendations provided to: \_\_\_\_\_ Signature: \_\_\_\_\_

Recommendations provided by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Please feel free to contact me if you have any questions. I can be reached at: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Symptom Checklist**

1. Loss of consciousness – passed out
2. Excessive drowsiness
3. Increase in the severity of headache
4. Dizziness
5. Lack of coordination - unsteadiness
6. Change in speech pattern -slurring
7. Inability to concentrate
8. Blurred or double vision
9. Unequal pupil size
10. A stiff neck or pain around the neck or head
11. Any area of numbness, tingling, or weakness develops
12. Seizure activity or convulsions
13. Vomiting
14. Amnesia – has no memory or can't remember
15. Change in behavior or emotional instability
16. Agitation or becomes easily aggravated
17. Loss of bowel or bladder function – inability to control going to the bathroom





# NC STATE UNIVERSITY SPORTS MEDICINE

## Concussion Awareness

**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 or floor, or being hit by a piece of equipment such as a bat or a ball.)
- Can change the way your brain normally works.
- 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 may all cause concussions.
- Follow the Athletics Department's rules for safety and the rules of the sport.
- Practice good sportsmanship at all times.

**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.               | • Balance problems or dizziness.         | • Feeling sluggish, foggy or groggy. |
| • Confusion.             | • Double or fuzzy vision.                | • Feeling unusually irritable.       |
| • Headache.              | • Sensitivity to light or noise.         | • Slowed reaction time.              |
| • Loss of consciousness. | • Nausea (feeling that you might vomit). | • Concentration or memory problems   |

Although most athletes that experience a concussion recover within 7-10 days, some concussions may take much longer to resolve. There is evidence to suggest that sustaining a concussion or even multiple sub-concussive brain injuries may lead to long term consequences such as prolonged symptoms, psychological distress, depression, and/or Chronic Traumatic Encephalopathy (CTE). CTE is a progressive brain disease believed to be caused by repetitive trauma to the brain, including concussions or sub-concussive blows. CTE is characterized by symptoms such as memory impairment, emotional instability, erratic behavior, depression, and problems with impulse control. The disease may ultimately progress to full-blown dementia. Ultimately, sustaining a concussion could lead to death.

**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 continue to participate 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.

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 a headache or tiredness) to reappear or get worse. Get help by talking to your athletic trainer.

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

**By signing below, I acknowledge that I understand that there are certain risks involved in participating in athletics at NC State University, including those risks associated with head injuries and concussions. I agree to report all signs and symptoms of my injuries to the Sports Medicine Staff immediately. Additionally, I will help protect my teammates by reporting their signs and symptoms to the Sports Medicine Staff. I understand that each head injury is different and the each injury will be treated individually, with each return to play decision performed on an individual basis. By signing this, I agree to follow the direction of treatment and care designated by the NC State Sports Medicine Staff. I understand that I must be cleared by an NC State Sports Medicine physician before returning to play.**

\_\_\_\_\_  
Athlete's Name Printed

\_\_\_\_\_  
Athlete's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Legal Guardian's Printed (if under 18)

\_\_\_\_\_  
Parent/Legal Guardian's Signature

\_\_\_\_\_  
Date



# NC STATE UNIVERSITY

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## *SPORTS MEDICINE*

Shared Responsibility and Assumption of Risk

**Shared Responsibility and Assumption of Risk:** Participation in intercollegiate athletics involves inherent dangers and physical risks. The inherent dangers and physical risks involved in these activities are such that that no amount of care, caution, instruction or expertise can eliminate, and can result in injuries, permanent disabilities, or even death. Examples include, but are not limited to:

- Sudden death, heart attack, respiratory failure
- Paralysis, spinal cord damage, nerve damage
- Head injuries, concussions, brain damage, Chronic Traumatic Encephalopathy
- Dental injuries, tooth fractures, loss of teeth, facial disfigurement
- Broken bones, joint damage, arthritis
- Eye injury, vision loss
- Loss or injury to vital organs
- Muscle and ligament damage, sprains, ruptures
- Menstrual irregularities and complications
- Psychological distress, depression, anxiety

Reasonable precautions should be made by all participants, coaches, staff, and administrators to minimize this risk. Each sport has its own set of safety rules and regulations which should be adhered to at all times. To rely on officials to enforce compliance with the rulebook is as insufficient as to rely on warning labels to produce compliance with safety guidelines. As a student-athlete, it is your responsibility to take appropriate steps to prevent injuries when possible by following the rules of the game and wearing all recommended and required protective equipment and braces. Additionally, it is your responsibility to provide timely and accurate information regarding all injuries and illnesses (whether the injury pertains to yourself or a teammate) to the appropriate Sports Medicine staff member and coaches and to comply with their directions.

By signing below, I acknowledge that I fully understand and accept the RISKS associated with my participation in athletics at NC State, and these activities are such that that no amount of care, caution, instruction or expertise can eliminate. If I have any further questions regarding the risks inherent to my sport, I understand that it is my responsibility to ask a member of the NC State Sports Medicine Staff. I assume responsibility for all risks, known and unknown, involved to me in the aforementioned activities, and I am voluntarily participating in reliance upon my own judgment and knowledge of my own experience and capabilities. To minimize my risk, I agree to follow and play within the rules of this sport. I agree to report all injuries/illnesses in a timely manner to the Sports Medicine Staff. Additionally, I have provided an accurate medical history and I will update my records as needed. I understand that having passed a physical examination does not necessarily mean that I am physically qualified to engage in athletics, but only that the evaluator did not find a medical reason to disqualify me at the time of the evaluation.

\_\_\_\_\_  
Student-Athlete's Name (Print)

\_\_\_\_\_  
Signature of Student-Athlete

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent's Name (Print)  
(If student athlete is under 18)

\_\_\_\_\_  
Signature of Parent

\_\_\_\_\_  
Date



## **Concussion Management Temporary Academic Accommodations**

There is a growing body of evidence to suggest that complete rest is the most ideal environment when recovering from a concussion. Cognitive function as well as physical activity should be addressed when considering the treatment plan. Any activity which exasperates concussion symptoms should be avoided in order to shorten the recovery process. Temporary academic accommodations may need to be established for a student-athlete who presents symptoms while participating in the academic setting. Setting up temporary academic accommodations should be a cooperative effort between Sports Medicine, Academic Support, and Disability Services.

The following guideline should be used when requesting accommodations for student-athletes who have sustained a concussion.

- 1.) A student-athlete is diagnosed with a concussion by a team physician, ER physician or ATC.
- 2.) The ATC contacts Academic Support to initiate the Concussion Protocol for concussed Athletes
- 3.) A request for temporary accommodations must be made with Disability Services.
- 4.) Disability Services and Academic Support will coordinate with the appropriate faculty members to request additional vigilance or temporary leave.
- 5.) Sports Medicine, Disability Services and Academic Support stay in frequent contact (every 3-5 days) regarding the student-athlete's progression.
- 6.) Serial evaluations are made by Sports Medicine to determine recovery back to baseline levels.
- 7.) Sports Medicine releases the student-athlete to gradual participation in academic load notifying Academic support.
- 8.) Student-athlete is monitored for increased symptoms and returned to physician if worsening occurs.
- 9.) Academic load can increase as symptoms continue to resolve.
- 10.) As full load is re-established, Disability Services determines the necessity of continued classroom modifications and maintains communication with the appropriate faculty members.
- 11.) Sports Medicine and Academic Support maintain a high level of vigilance with all previously concussed student-athletes.

## EDUCATIONAL ACCOMODATIONS CHECKLIST FOR CONCUSSIONS

**Instructions for Parents & Guardians:** Fill out the checklist below together with your child's primary physician and return it to the school nurse or principal. This sheet will provide the school staff with proper educational accommodations to guarantee your child the quickest recovery possible.

Visit [http://www.cdc.gov/headsup/pdfs/schools/tbi\\_returning\\_to\\_school-a.pdf](http://www.cdc.gov/headsup/pdfs/schools/tbi_returning_to_school-a.pdf) for more 'Returning to School After a Concussion' resources.

Patient Name: \_\_\_\_\_ Date: \_\_\_\_\_

I, \_\_\_\_\_, give permission for my physician to share the following information with my child's school and for communication to occur between the school and my physician for changes to this plan. Parent Signature: \_\_\_\_\_

Physician Name and Contact Information: \_\_\_\_\_ Physician Signature: \_\_\_\_\_

The patient will be reevaluated for revision of these recommendations in \_\_\_\_\_ weeks. Date: \_\_\_\_\_

### Computerized Neurocognitive Testing

Baseline Testing                       Post-injury Testing                       Passport ID #: \_\_\_\_\_

Area	Requested Accomodations	Comments/ Clarifications
<b>Attendance</b>	<input type="checkbox"/> No School <input type="checkbox"/> Partial School day as tolerated by student – emphasis on core subject work <u>Encouraged Classes:</u> _____ <u>Discouraged Classes:</u> _____ <input type="checkbox"/> Full School day as tolerated by student <input type="checkbox"/> Water bottle in class/snack every 3-4 hours	
<b>Breaks</b>	<input type="checkbox"/> If symptoms appear/ worsen during class, allow student to go to quiet area or nurse's office; if No improvement after 30 minutes allow dismissal to home <input type="checkbox"/> <u>Mandatory Breaks:</u> _____ <input type="checkbox"/> Allow breaks during day as deemed necessary by student or teachers/school personnel	
<b>Visual Stimulus</b>	<input type="checkbox"/> Enlarged print (18 font) copies of textbook material / assignments <input type="checkbox"/> Pre-printed notes (18 font) or note taker for class material <input type="checkbox"/> Limited computer, TV screen, bright screen use <input type="checkbox"/> Allow handwritten assignments (as opposed to typed on a computer) <input type="checkbox"/> Allow student to wear sunglasses/hat in school; seat student away from windows and bright lights <input type="checkbox"/> Reduce brightness on monitors/screens <input type="checkbox"/> Change classroom seating to front of room as necessary	
<b>Auditory Stimulus</b>	<input type="checkbox"/> Avoid loud classroom activities <input type="checkbox"/> Lunch in a quiet place with a friend <input type="checkbox"/> Avoid loud classes/places (i.e. music, band, choir, shop class, gym and cafeteria) <input type="checkbox"/> Allow student to wear earplugs as needed <input type="checkbox"/> Allow class transitions before the bell	
<b>School Work</b>	<input type="checkbox"/> Simplify tasks (i.e. 3 step instructions) <input type="checkbox"/> Short breaks (5 minutes) between tasks <input type="checkbox"/> Reduce overall amount of in-class work <input type="checkbox"/> Prorate workload (only core or important tasks) /eliminate non-essential work <input type="checkbox"/> No homework <input type="checkbox"/> Reduce amount of nightly homework _____ minutes per class; _____ minutes maximum per night <input type="checkbox"/> Will attempt homework, but will stop if symptoms occur <input type="checkbox"/> Extra tutoring/assistance requested <input type="checkbox"/> May begin make-up of essential work	
<b>Testing</b>	<input type="checkbox"/> No Testing <input type="checkbox"/> Additional time for testing/ untimed testing <input type="checkbox"/> Alternative Testing methods: oral delivery of questions, oral response or scribe <input type="checkbox"/> No more than one test a day <input type="checkbox"/> No Standardized Testing	
<b>Educational Plan</b>	<input type="checkbox"/> Student is in need of an IEP and/or 504 Plan (for prolonged symptoms lasting >3 months, if interfering with academic performance)	
<b>Physical Activity</b>	<input type="checkbox"/> No physical exertion/athletics/gym/recess <input type="checkbox"/> Walking in PE class/recess only <input type="checkbox"/> May begin return to play	



# 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](http://ncaa.org/concussion).





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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](http://ncaa.org/concussion).

# CONCUSSION TIMELINE







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## CONCUSSION SAFETY PROTOCOL CHECKLIST

*Below is a checklist that will help the athletics health care administrator ensure that the member school's concussion safety protocol is compliant with the Concussion Safety Protocol Legislation and is consistent with [Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Best Practices](#).*

Please do not hesitate to reach out to Brian Hainline (NCAA chief medical officer and administrative chair of the committee) at [ssi@ncaa.org](mailto:ssi@ncaa.org) if you have any questions or concerns. The committee's primary purpose is to serve as an advocate for promoting and developing concussion safety management plans for each member school.

## PRESEASON EDUCATION:

Education management plan that specifies:

- Institution has provided NCAA concussion fact sheets (NCAA will make material available) or other applicable material annually to the following parties: **Materials are available to take at-will from all facilities. New materials are posted on cork boards around the facilities (page 2-3, 25-26, 29-32).**
  - Student-athletes. **Every year, student-athletes are required to sign acknowledgment forms regarding concussions (page 2-3, 25-26, 31-32).**
  - Coaches. **Every year, coaches are informed of specific policy responsibilities and are required to sign acknowledgment forms regarding concussions (page 2-3, 29-30, 91-98).**
  - Team physicians. **Our doctors perform routine evaluations of all of our policies and procedures. (page 2)**
  - ATCs. **Every year, our staff conducts an in-service to review all policies and procedures. Specific attention is drawn to concussion management and recognition. (page 2)**
  - Directors of athletics. **Presentations are made to the Director of Athletics and Sport Supervisors. (page 3)**
- Each party provides a signed acknowledgement of having read and understood the concussion material. **Signatures are filed annually. We are moving to collect signatures electronically thru our compliance software ARMS.**

## PRE-PARTICIPATION ASSESSMENT:

Pre-participation management plan that specifies:

- Documentation that each varsity student-athlete has received at least one pre-participation baseline concussion assessment that addresses: **Pre-participation documentation is kept in each athletes chart. All students are evaluated for a history of concussions. In previous years, only high risk athletes were baseline tested with ImPact and SCAT3 evaluations. As of 2015, all student-athletes will have a baseline ImPact and SCAT3/C3Logix (page 3)**
  - Brain injury and concussion history. **Pre-participation History. Reviewed by staff ATC and Physician. Page 2, 126-136**
  - Symptom evaluation. **Page 3, 22-23 (modified SCAT3)**
  - Cognitive assessment. **Page 3, 22-23 (modified SCAT3)**
  - Balance evaluation. **Page3, 22-23 (modified SCAT3)**
  - Team Physician determines pre-participation clearance and/or the need for additional consultation or testing.\* **Pre-participation physical exam Page 135**

*\*Consider a new baseline concussion assessment six months or beyond for any varsity student-athlete with a documented concussion, especially those with complicated or multiple concussion history. Page 3*

## RECOGNITION AND DIAGNOSIS OF CONCUSSION:

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Recognition and diagnosis of concussion management plan that specifies:

- Medical personnel with training in the diagnosis, treatment and initial management of acute concussion must be “present” at all NCAA varsity competitions in the following contact/collision sports: basketball; equestrian; field hockey; football; ice hockey; lacrosse; pole vault; rugby; skiing; soccer; wrestling. To be present means to be on site at the campus or arena of the competition. Medical personnel may be from either team, or may be independently contracted for the event. **Page 2**
  
- Medical personnel with training in the diagnosis, treatment and initial management of acute concussion must be “available” at all NCAA varsity practices in the following contact/collision sports: basketball; equestrian; field hockey; football; ice hockey; lacrosse; pole vault; rugby; skiing; soccer; wrestling. To be available means that, at a minimum, medical personnel can be contacted at any time during the practice via telephone, messaging, email, beeper or other immediate communication means. Further, the case can be discussed through such communication, and immediate arrangements can be made for the athlete to be evaluated. **Page 2**
  
- Any student-athlete with signs/symptoms/behaviors consistent with concussion:
  - Must be removed from practice or competition. **Page 2-3**
  
  - Must be evaluated by an athletic trainer or team physician with concussion experience. **Page 2-3**
  
  - Must be removed from practice/play for that calendar day if concussion is confirmed. **Page 2-3**

Initial suspected concussion evaluation management plan that specifies:

- Symptom assessment. Page 3, 22-23 (modified SCAT3)
- Physical and neurological exam. Page 3, 22-23 (modified SCAT3)
- Cognitive assessment. Page 3, 22-23 (modified SCAT3)
- Balance exam. Page 3, 22-23 (modified SCAT3)
- Clinical assessment for cervical spine trauma, skull fracture and intracranial bleed. Page 3, 22-23 (modified SCAT3)

## POST-CONCUSSION MANAGEMENT:

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Post-concussion management plan that specifies:

- Emergency action plan, including transportation for further medical care, for any of the following: **Page 3, 18-19, 21, 103-105**
  - Glasgow Coma Scale < 13. **Page 21**
  - Prolonged loss of consciousness. **Page 21**
  - Focal neurological deficit suggesting intracranial trauma. **Page 21**
  - Repetitive emesis. **Page 21**
  - Persistently diminished/worsening mental status or other neurological signs/symptoms. **Page 21**
  - Spine injury. **Page 21**
- Mechanism for serial evaluation and monitoring after injury. **Page 18-19**
- Documentation of oral and/or written care to both student-athlete and another responsible adult.\* **Page 24**

*\*May be parent or roommate.*

- Evaluation by a physician for student-athlete with prolonged recovery in order to consider additional diagnosis\* and best management options. **Page 2, 4**

*\*Additional diagnoses include, but are not limited to:*

- *Post-concussion syndrome.*
- *Sleep dysfunction.*
- *Migraine or other headache disorders.*
- *Mood disorders such as anxiety and depression.*
- *Ocular or vestibular dysfunction.*

## RETURN-TO-PLAY:

Return-to-play management plan that specifies:

- Final determination of return-to-play is from the team physician or medically qualified physician designee. **Page 2, 4-5**
- Each student-athlete with a concussion must undergo a supervised stepwise progression management plan by a health care provider with expertise in concussion that specifies: **Page 2, 4-5, 20**
  - Student-athlete has limited physical and cognitive activity until he/she has returned to baseline, then progresses with each step below without worsening or new symptoms: **Page 2, 4-5, 20**
    - Light aerobic exercise without resistance training. **Page 4, 20**
    - Sport-specific exercise and activity without head impact. **Page 4, 20**
    - Non-contact practice with progressive resistance training. **Page 4, 20**
    - Unrestricted training. **Page 4, 20**
    - Return to competition. **Page 4, 20**

## RETURN-TO-LEARN:

Return-to-learn management plan that specifies:

- Identification of a point person within the athletics department who will navigate return-to-learn with the student-athlete. **Page 3, 27**
- Identification of a multidisciplinary team\* that will navigate more complex cases of prolonged return-to-learn: **Page 2-3, 27**

*\*Multidisciplinary team may include, but not be limited to:*

- *Team physician.*
  - *Athletic trainer.*
  - *Psychologist/counselor.*
  - *Neuropsychologist consultant.*
  - *Faculty athletics representative.*
  - *Academic counselor.*
  - *Course instructor(s).*
  - *College administrators.*
  - *Office of disability services representatives.*
  - *Coaches.*
- 
- Compliance with ADA/AA. **Page 3, 27 Determined by DSO**
  - No classroom activity on same day as the concussion. **Page 24**
  - Individualized initial plan that includes: **Page 5, 27**
    - Remaining at home/dorm if the student-athlete cannot tolerate light cognitive activity. **Page 5, 24, 27**
    - Gradual return to classroom/studying as tolerated. **Page 5, 27**
  - Re-evaluation by the team physician if concussion symptoms worsen with academic challenges. **Page 2, 5, 27**



- Modification of schedule/academic accommodations for up to two weeks, as indicated, with help from the identified point person. **Page 2-3, 5, 27 Determined by the physician and DSO**
- Re-evaluation by the team physician and members of the multidisciplinary team, as appropriate, for a student-athlete with symptoms lasting longer than two weeks. **Page 2-3, 5, 27 Determined by the physician and DSO**
- Engaging campus resources for cases that cannot be managed through schedule modification/academic accommodations. **Page 2-3, 5, 27 Determined by the physician and DSO**
- Such campus resources must be consistent with ADA/AA, and include at least one of the following: **Page 2-3, 5, 27 Determined by the physician and DSO**
  - *Learning specialists.*
  - *Office of disability services.*
  - *ADA/AA office.*

## REDUCING EXPOSURE TO HEAD TRAUMA:

- Reducing head trauma exposure management plan.\* **Page 5, 44-91**

*\*While the committee acknowledges that ‘reducing’ may be difficult to quantify, it is important to emphasize ways to minimize head trauma exposure. Examples of minimizing head trauma exposure include, but are not limited to:*

- *Adherence to Interassociation Consensus: Year-Round Football Practice Contact Recommendations.*
- *Adherence to Interassociation Consensus: Independent Medical Care for College Student-Athletes Best Practices.*
- *Reducing gratuitous contact during practice.*
- *Taking a ‘safety-first’ approach to sport.*
- *Taking the head out of contact.*
- *Coaching and student-athlete education regarding safe play and proper technique.*

## ADMINISTRATIVE:

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- Institutional plan submitted\* to the Concussion Safety Protocol Committee by May 1. Submitted 4/20/2019

*\*Plans must be submitted via [Program Hub](#).*

- Written certificate of compliance signed by the athletics health care administrator that accompanies the submitted plan. Page 43

**NC State University  
Concussion Management Plan**

By signing and dating this form, you acknowledge, on behalf of your institution, that for the 2019-2020 academic year:

- 1. The Concussion Management Plan fulfills the requirements of NCAA Concussion Management Legislation (Division I Constitution 3.2.4.18).
- 2. The Concussion Safety Protocol is consistent with Inter-Association Consensus: Diagnosis and Management of Sport-Related Concussion Best Practices and also meets the requirements of Division I Constitution 3.2.4.18.1.

***Required Signature***

***Athletics Health Care Administrator***



\_\_\_\_\_  
Signature of Athletics Health Care Administrator

Robert Murphy  
\_\_\_\_\_  
Print or type Name

4/20/2019  
\_\_\_\_\_

Date



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**INTERASSOCIATION CONSENSUS:**

# DIAGNOSIS AND MANAGEMENT OF SPORT-RELATED CONCUSSION BEST PRACTICES



# PURPOSE

The Second Safety in College Football Summit resulted in interassociation consensus recommendations for four paramount safety issues in collegiate athletics:

1. Independent medical care for college student-athletes.
2. Diagnosis and management of sport-related concussion.
3. Year-round football practice contact for college student-athletes.
4. Preventing catastrophic injury in college student-athletes.

This document addresses the diagnosis and management of sport-related concussion in the collegiate setting for all sports. The final recommendations in this document are the offspring of presentations and discussions on key items that address diagnosis and management of sport-related concussion. Following the presentations and discussions, endorsing organization representatives agreed on foundational statements that became the basis for a draft consensus paper that was reviewed further by relevant stakeholders and endorsing organizations. The final, endorsed best practices document for the diagnosis and management of sport-related concussion follows.

This document is divided into the following sections:

## **BACKGROUND**

This section provides an overview of the challenges of developing consensus best practices for the diagnosis and management of sport-related concussion.

## **DATA-DRIVEN DECISION MAKING**

This section provides an overview of emerging data relevant to guiding decision-making for diagnosing and managing sport-related concussion.

## **DIAGNOSIS AND MANAGEMENT OF SPORT-RELATED CONCUSSION BEST PRACTICES**

This section provides the final, endorsed recommendations of the medical organizations for diagnosis and management of sport-related concussion best practices.

## **REFERENCES**

This section provides the relevant references for this document.

## **APPENDICES**

This section lists the agenda, summit attendees and medical organizations that endorsed this document.



## BACKGROUND

There are more than 42 consensus-based definitions of concussion. The only evidence-based definition of concussion follows.<sup>1</sup>

Concussion is:

- a change in brain function,
- following a force to the head, which
- may be accompanied by temporary loss of consciousness, but is
- identified in awake individuals, with
- measures of neurologic and cognitive dysfunction.

Diagnosis and management of sport-related concussion is a clinical diagnosis based on the judgment of the athlete's health care providers.<sup>2-4</sup> The diagnosis and management of sport-related concussion is challenging for many reasons:<sup>5-11</sup>

- The physical and cognitive examinations are often normal, and additional tests such as brain computerized tomography, brain MRI, electroencephalogram and blood tests are also commonly normal. Comprehensive

neuropsychological tests may be a useful adjunctive tool supporting the diagnosis of sport-related concussion but the valid administration and interpretation of these tests is complex and requires appropriate training and/or supervisory oversight.<sup>12</sup>

- The clinical effects of sport-related concussion are often subtle and difficult to detect with existing sport-related concussion assessment tools.
- The symptoms of sport-related concussion are not specific to concussion and it is challenging to evaluate a student-athlete who presents non-specific symptoms that may be related to other conditions.
- Sport-related concussion may manifest with immediate or delayed-onset symptoms. Symptom manifestation can vary between individuals and in the same individual who has suffered a repeat concussion.
- Modifying factors and co-morbidities—such as attention deficit hyperactivity disorder, migraine and other headache disorders, learning disabilities and mood disorders — should be considered in making the diagnosis, providing a management

- plan and making both return-to-play and return-to-learn recommendations.
- “Signal detection” on clinical measures (e.g., cognitive and balance testing) often quickly diminishes in the acute setting of early recovery. Although cognitive function and balance assessed within 24 hours with various sideline tests (Standardized Assessment of Concussion and Balance Error Scoring System, respectively) have been shown to be useful in diagnosing concussion, these tests often normalize within a few days and cannot be used to make a definitive diagnosis.
  - Student-athletes may underreport symptoms and inflate their level of recovery in hopes of being rapidly cleared for return to competition.
  - Clinical assessment of sport-related concussion is a surrogate index of recovery and not a direct measure of brain structure and functional integrity after concussion.

To address many of the knowledge shortcomings in diagnosing and managing sport-related concussion, the NCAA and the Department of Defense partnered to develop the NCAA-DoD Grand Alliance,<sup>13</sup> which is comprised of the Concussion Assessment, Research and Education Consortium, also known as the CARE Consortium, and the Mind Matters Challenge. The Mind Matters Challenge is an educational and research challenge whose aim is to develop paradigms that will change the culture of concussion. The CARE Consortium is a prospective, clinical, longitudinal study whose aim is to answer the following scientific questions, for which there are currently no definitive answers:<sup>14-16</sup>

- What is the natural history of concussion, both short- and long-term?
- What functional domains are reliably impaired following concussion?
- Are specific functional domains more or less predictive of concussion recovery trajectory?
- Are all concussions the same?
  - ◊ Is there a difference that is sport-specific?
  - ◊ Is there a gender difference?
- What is the neurobiology of concussion?
- Are there critical biomechanical elements that predict concussion, prognosis and recovery?
- Is concussion the most meaningful metric to address?

- ◊ What is the neurobiology of repetitive head impact?
- Is there a disconnect between the clinical and the neurophysiological “return-to-play/return-to-learn” activities?
- What role can neuroimaging biomarkers, fluid biomarkers and genotype play in answering the neurobiological recovery questions?

The CARE Consortium is on track to study more than 25,000 student-athletes and 1,000 concussions. To date, the CARE Consortium is already the largest prospective, longitudinal, clinical concussion study ever conducted. This study and others are helping to drive concussion diagnosis and management from consensus-based to a more science-based paradigm, but data to date remain preliminary and incomplete.

In summary, the natural history of concussion remains poorly defined, diagnosis can be difficult, there are often few objective findings for diagnosis or physiological recovery that exist for clinical use, and there often remains a significant reliance on self-report of symptoms from the student-athlete.

The NCAA Concussion Policy and Legislation<sup>3,2,4,17</sup> mandates that institutions implement the following:<sup>17</sup>

1. An annual process that ensures student-athletes are educated about the signs and symptoms of concussion.
2. A process that ensures a student-athlete who exhibits signs, symptoms or behaviors consistent with a concussion shall be removed from athletics activities and evaluated by a medical staff member with experience in the evaluation and management of concussion.
3. A policy that precludes a student-athlete diagnosed with a concussion from returning to athletic activity for at least the remainder of that calendar day.
4. A policy that requires medical clearance for a student-athlete diagnosed with a concussion to return to athletics activity as determined by a physician or the physician’s designee.

As a result of the 2014 Safety in College Football Summit, “Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Guidelines”

was released.<sup>18</sup> This document subsequently became the basis for NCAA Autonomy Legislation<sup>3.2.4.17.1,19</sup> which adds the following requirements to the previously existing legislation:

- Concussion Safety Protocol. An institution shall submit its Concussion Safety Protocol to the Concussion Safety Protocol Committee by May 1 of each year. The protocol shall be consistent with the “Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Guidelines” and shall include:
  - a. Policies and procedures that meet the requirements of Constitution.<sup>3.2.4.17</sup>
  - b. Procedures for pre-participation baseline testing of each student-athlete.
  - c. Procedures for reducing exposure to head injuries.
  - d. Procedures for education about concussion, including a policy that addresses return-to-learn.
  - e. Procedures to ensure that proper and appropriate concussion management, consistent with best known practices and the “Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Guidelines,” is made available to any student-athlete who has suffered a concussion.
  - f. Procedures requiring that the process of identifying, removing from game or practice, and assessing a student-athlete for a possible concussion are reviewed annually.
  - g. A written certificate of compliance signed by the institution’s athletic director.





## DATA-DRIVEN DECISION MAKING

Emerging data from the historic NCAA-DoD CARE Consortium study, which is part of the larger NCAA-DoD Grand Alliance, are helping to shape a science-driven approach to addressing concussion and head impact exposure in sport.<sup>14-16</sup> In addition, many NCAA member schools have obtained important clinical and accelerometer data in football.<sup>20-24</sup> Such emerging data, coupled with available science, were presented and discussed at the Second Safety in College Football Summit. Following presentations and discussions, all attendees were invited to weigh in on “foundational statements” and updated sport-related concussion diagnosis and management guidelines. Foundational statements and recommendations were amended based on feedback, and when more than 80

percent consensus was reached among the participants, the statements and recommendations were then voted on by representatives of both medical and football endorsing organizations (see Appendix C for endorsing organizations). Only those statements and recommendations that were agreed upon by 100 percent of both endorsing organization representatives were then placed into this document for further review and final endorsement. The foundational statements follow, including a brief synopsis of the rationale that was agreed upon by the endorsing organization representatives. Of note, none of the foundational statements led to any substantive changes in the 2014 document “Interassociation Consensus: Diagnosis and Management of Sport-Related Concussion Guidelines.”

# FOUNDATIONAL STATEMENTS

## **Head accelerometers are currently unable to function as concussion detectors.**

One can envision a future in which head contact exposure data can be individualized for each athlete, and thus general contact guidelines that apply to an entire team would no longer be necessary. At this point in time, the science of accelerometers and accelerometer data coupled with clinical outcomes, are inadequate to provide such guidance.<sup>21-23</sup> Although accelerometers are improving in providing linear and rotational forces, all have limitations, ranging from inaccuracy in counting head impacts, measuring head acceleration, over-predicting rotational acceleration or inadequate field testing relative to dummy testing. Furthermore, there is no clear relationship between accelerometer measurements and clinical outcome.<sup>25-26</sup> Thus, general guidelines for football practice are still necessary until the science of accelerometers can provide individualized guidance.

## **Head accelerometers can be utilized to assess group differences among types of football practices and competition.**

To date, the science of head accelerometers has been challenging because of poor reliability and accuracy. The HITS system, which is placed inside of a football helmet, is similarly challenged with reliability and accuracy data, but this system can provide group data in football players that is useful. Thus, although head accelerometers cannot provide individualized data that allows a personalized approach to head contact exposure, the science has advanced sufficiently to allow group differences among various positions (e.g., lineman, safety, quarterback) with regard to head contact exposure risk.<sup>24</sup> Such data can guide football coaches and the medical team in devising a head contact exposure reduction plan for various football positions. The hope is for such an approach to be applicable to other sports.

## **Data inform us that a substantial number of concussions occur in preseason.**

Emerging data point to the risk of preseason activities that focus on intense training for both conditioning and sport technique mastery.<sup>16,20</sup> Concussion risk is multi-faceted and is in large part mediated by repetitive contact/collision forces coupled with limited recovery time—such is the hallmark of intense preseason training. A brain that is primed from repetitive head impact may be more susceptible to developing a concussion than a brain that has not had such repetitive exposure.

## **Concussions are characterized by diverse symptoms and impairments in function that may result in different recovery trajectories.**

Although we do not have definitive data on the many ways concussion may manifest, emerging data demonstrate that we should not assume that all concussions are the same. It is true that concussion is a change in brain function with measures of neurologic and cognitive impairment, but the location(s) of change in brain function, the degree to which function is impaired, and other confounding variables may lead to diverse symptoms and impairments in function that result in different recovery trajectories. There are emerging data that guide us with regard to how concussion management may differ based on the manner in which concussion manifests.<sup>27</sup>

## **Post-concussion management should be based on a combination of emerging evidence, best practices, consensus statements and guidelines that have been established by the scientific community.**

The scientific understanding of concussion diagnosis and management remains in its infancy and is rapidly evolving. This means that practitioners have a daunting challenge in providing concussion management

that is up-to-date. Furthermore, “up-to-date” varies based on whether the emerging evidence is a scientific article, a consensus statement or some other type of guideline. One reason for this interassociation document update is to help address this management reality.

**Student-athletes may not recognize the symptoms of concussion at the time of injury, or may not recognize the importance of reporting concussion at the time of injury, both of which can lead to delayed reporting.**

A primary reason for the NCAA-DoD Mind Matters Challenge is that the culture of concussion needs to change, including how to recognize symptoms and how to understand the importance of prompt reporting of concussion symptoms.<sup>10,11,16</sup> Student-athletes may delay concussion reporting for various reasons, and as noted below, this is associated with a more prolonged recovery trajectory.

**When a student-athlete does not report symptoms for treatment at the time of injury, then return-to-play is prolonged.**

Emerging data from the NCAA-DoD CARE Consortium indicate that delayed concussion reporting results in about a two day longer return-to-play trajectory.<sup>16</sup> This is consistent with recently published data from a NCAA cross-sectional design study that revealed an almost five day longer return-to-play for athletes who had delayed reporting concussion.<sup>28</sup> We do not yet understand why this is so, but one explanation is that continued sport activity immediately following concussion exposes the already injured brain to worsened neuropathophysiological processes.<sup>28</sup> The implications are clear: delayed concussion reporting leads to delayed return to activity post-concussion.

**Emerging data inform us that a substantial percentage of athletes do not complete a graded exertional return-to-play protocol.**

CARE Consortium data to date reveal that 72 percent of athletes complete a graded exertion protocol, meaning that 28 percent do not.<sup>16</sup> Although no graded exertion protocols have been scientifically validated, the best consensus to date recommends that athletes undergo such a transition post-concussion prior to returning to full athletic activity. We do not yet know if failure to complete a graded exertion protocol is associated with adverse outcome, but we do believe that a graded exertion protocol makes sense for all athletes post-concussion.

*These foundational statements serve as filler material to the guidelines on the following page. The endorsing medical organizations do not believe that any emerging data necessitate a change in the guidelines as originally written in 2014. It is important to note that these guidelines remain “living, breathing” documents that may be updated as is appropriate with emerging science or consensus.*

# DIAGNOSIS AND MANAGEMENT OF SPORT-RELATED CONCUSSION BEST PRACTICES

The goals of developing best practices for the diagnosis and management of sport-related concussion are: (1) helping athletic health care providers to diagnose and manage sport-related concussion; (2) developing prevention strategies for sport-related concussions and repeat sport-related concussion; (3) promoting sport-related concussion injury resolution; (4) minimizing factors that contribute to prolonged or recurrent symptoms of sport-related concussion; and (5) preventing or minimizing complications of other co-morbidities that may accompany sport-related concussion (e.g., ADHD, migraine and other headache disorders, learning disabilities and mood disorders).

## Concussion Management Plan

Institutions should make their concussion management plan publicly available, either through printed material, their website, or both. Guideline components of a concussion management plan are:

1. *Education.* Institutions should provide applicable NCAA concussion fact sheets or other applicable educational material annually to student-athletes, coaches, team physicians, athletic trainers and athletics directors. There should be a signed acknowledgement that all parties have read and understand these concussion facts and their institution's concussion management plan.

2. *Pre-participation assessment.* A one-time, pre-participation baseline concussion assessment for all varsity student-athletes should include, but not necessarily be limited to:

- A brain injury/concussion history.
- Symptom evaluation.
- Cognitive assessment.
- Balance evaluation.

The team physician should determine pre-participation clearance and/or the need for additional consultation or testing.<sup>17</sup>

3. *Recognition and diagnosis of concussion.* All student-athletes who are experiencing signs, symptoms or behaviors consistent with a sport-related concussion, at rest or with exertion, must be removed from practice or competition and referred to an athletic trainer or team physician with experience in concussion management. A student-athlete's health care provider experienced in the diagnosis and management of concussion should conduct and document serial clinical evaluation inclusive of symptom inventory and evaluation of cognition and balance. A student-athlete diagnosed with sport-related concussion should not be allowed to return-to-play in the current game or practice and should be withheld from athletic activity for the remainder of the day. Disposition decisions for more serious injuries such as cervical spine trauma, skull fracture or intracranial bleed, should be made at the time of presentation.

4. *Post-concussion management.* The foundation of sport-related concussion management is initial physical and relative cognitive rest as part of an individualized treatment plan.<sup>2</sup> Initial management of sport-related concussion is based on individual serial clinical assessments, taking concussion history, modifying factors and specific needs of the student-athlete into consideration. Such management includes, but is not limited to:<sup>29</sup>

- Clinical evaluation at the time of injury. When the rapid assessment of concussion is necessary (e.g., during competition), symptom assessment, physical and neurological exam and balance exam should be performed. Brief concussion evaluation tools such as the Standardized Concussion Assessment Tool<sup>3</sup>, also known as SCAT3, which includes the Standardized Assessment of Concussion, provide standardized methods and can be compared to a baseline evaluation.
- Assessment for head and cervical spine injury at time of injury and implementation of the

emergency action plan, as warranted.

- 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 one minute); focal neurological deficit; repetitive emesis; persistently diminished or worsening mental status or other neurological signs or symptoms; and potential spine injury.
- 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.

### **Return to activity**

Sport-related concussion is a challenging injury for student-athletes and, unlike other injuries, the timeline for return to full activity (including return-to-play and return-to-learn) is often difficult to project. The psychological response to injury is also unpredictable. Sometimes, student-athletes who are kept out of their sport for a prolonged period of time experience emotional distress related to being unable to participate in sport.<sup>30-31</sup> It is important that health care providers remain alert to the signs and symptoms of depression and other emotional responses to injury that can be particularly challenging following concussive injury.<sup>30-31</sup> A student-athlete's health care providers should verify the diagnosis instead of assuming that the student-athlete has prolonged concussion symptoms. These symptoms may represent post-concussion syndrome, sleep dysfunction, migraine or other headache disorders, or co-morbid mood disorders such as anxiety and depression.<sup>32</sup> Passive management, such as prolonged physical and cognitive rest, may be counter-productive in these scenarios.

### *Active, Targeted Treatment for Concussion*

Although initial treatment for concussion typically involves prescribed physical and cognitive rest, there is emerging evidence that active, targeted approaches for treating concussion may be more effective for

certain patients.<sup>27,33,34</sup> Prolonged rest may even lead to adverse effects, including social isolation, anxiety, low self-esteem, physical deconditioning and academic difficulties.<sup>35,36</sup> Given potential adverse effects from prolonged rest, coupled with the diverse symptoms and impairments in function that may result from concussion, treatment options may potentially include more active, targeted directed approaches in athletes that have specific symptoms and impairment. Specifically, some researchers have advocated for matching targeted treatments to an athlete's concussion clinical profiles (i.e., symptoms, impairment) such as vestibular, oculo-motor, cognitive, fatigue, migraine, cervicogenic and anxiety/mood.<sup>37,38</sup>

Scenarios that may warrant active, targeted treatment include:

- For athletes with prolonged symptoms and impairment, progressive aerobic exertion may be effective.<sup>39</sup> The type of aerobic activity may also be driven by symptoms. For example, an athlete with a vestibular clinical profile may experience exacerbated symptoms during treadmill running as a consequence of head/eye movements during this activity, but might do well on stationary cycling at the same intensity.
- There is growing evidence that vestibular therapies that target deficits in gaze stability, proprioception, vestibular ocular reflex, postural control and dynamic gait may be effective for athletes with this clinical profile.<sup>40,41</sup>
- Vision therapies that target deficits such as accommodative and convergence insufficiencies, impaired version eye movements and ocular misalignments may be effective for treating athletes with vision and ocular motor clinical profiles.<sup>42,43</sup>

It is important to note that the effects of targeted post-concussion treatments on the underlying pathophysiology of concussion are unknown. To date, there are no empirical data to inform the timing, intensity or type of treatment for patients with concussion. Additional empirical research on the efficacy of various treatments for concussion is warranted. Until then, the guidelines for targeted treatment can serve as an evolving framework for managing athletes.

## Return to play

Once a student-athlete has returned to his/her baseline, the return-to-play decision is based on a protocol of a stepwise increase in physical activity that includes both an incremental increase in physical demands and contact risk supervised by a physician or physician-designee.<sup>29</sup> Most return-to-play protocols are similar to those in the Consensus Statement on Concussion in Sport guidelines,<sup>4</sup> which outline a progressive increase in physical activity if the individual is at baseline before starting the protocol and remains at baseline throughout each step of the protocol. It is noteworthy that all return-to-play guidelines are consensus-based and have not been validated by evidence-based studies.<sup>3</sup> McCrea and colleagues<sup>44</sup> have reported that a symptom-free waiting period is not predictive of either clinical recovery or risk of a repeat concussion. Further, student-athletes have variable understanding of the importance of reporting possible concussion symptoms.<sup>10-11</sup> In summary, it should be recognized that current return-to-play guidelines are based on expert consensus.

As noted above, there is emerging evidence that focused exercise or recovery techniques may be utilized before full recovery has occurred. Given the paucity of scientific evidence regarding return-to-play and expert consensus documents that have been published, adherence to consensus guidelines is generally recommended. However, it is important to stress an individualized approach for return-to-play. Some student-athletes may have minimal concussive symptomatology with minimal symptom duration and no modifiers (conditions that may prolong recovery such as prior concussion, migraine, ADHD, depression/anxiety). Others may have specific vestibular or oculomotor symptoms that may warrant early active and targeted management. In scenarios of this nature, and with experienced clinicians in a highly select setting, the return-to-play protocol may be modified.<sup>45</sup> In contrast, if a student-athlete has a concussion history, increased symptom burden or duration, or has symptoms for three to four weeks with other concussion modifiers, then the return-to-play progression should proceed more cautiously and each stage may take more than a day.<sup>29</sup>

Distinctive neurological deficits, such as vestibular or oculo-motor dysfunction, should be specifically addressed to avoid prolonged return-to-play. For example, if a student-athlete suffers from vestibular dysfunction as a manifestation of sport-related concussion, and is unable to progress in the return-to-play protocol, it is important to address the specific vestibular dysfunction rather than to simply return the student-athlete to the previous level of return-to-play progression.<sup>27</sup> In other words, 'rest' can sometimes lead to adverse outcomes if an accurate diagnosis based on neurological dysfunction is not made. The guidelines presented herein serve as a general guide and are not meant to be prescriptive.

### *Stepwise progression*

The initial management of sport-related concussion is relative physical and cognitive rest. Athletes diagnosed with sport-related concussion must be removed from play and must not return to sport-related activity for at least one calendar day and are to be evaluated by a health care provider with expertise in sport-related concussion. Once a concussed student-athlete has returned to baseline level of symptoms, cognitive function and balance, then the return-to-play progression can be initiated, as follows in this general outline:

1. Light aerobic exercise such as walking, swimming or riding a stationary bike. No resistance training. If asymptomatic with light aerobic exercise, then;
2. Sport-specific activity with no head impact. If asymptomatic with sport-specific activity, then;
3. Non-contact sport drills and resumption of progressive resistance training. If asymptomatic with non-contact drills and resistance training, then;
4. Unrestricted training. If asymptomatic with unrestricted training, then;
5. Return-to-competition. Medical clearance will be determined by the team physician/physician designee, or athletic trainer in consultation with a team physician.

At any point, if the student-athlete becomes symptomatic (i.e., more symptomatic than baseline), or scores on clinical/cognitive measures decline, the team physi-

cian should be notified and the student-athlete should be returned to the previous level of activity. Final determination of return-to-play ultimately resides with the team physician/physician designee.

### **Return to academics**

Return to academics (return-to-learn) is a parallel concept to return-to-play,<sup>46-48</sup> but has received less scientific evaluation. Return-to-learn guidelines assume that both physical and cognitive activities require brain energy utilization, and that after a sport-related concussion, brain energy may not be available for physical and cognitive exertion because of the brain energy crisis.<sup>49</sup> Return-to-learn should be managed in a stepwise program that fits the needs of the individual, within the context of a multi-disciplinary team that includes physicians, athletic trainers, coaches, psychologists/counselors, neuropsychologists, administrators as well as academic (e.g. professors, deans, academic advisors) and office of disability services representatives. The return-to-learn recommendations outlined below are based on expert consensus. Like return-to-play, it is difficult to provide prescriptive recommendations for return-to-learn. The student-athlete may appear physically normal but may be unable to perform as expected due to concussive symptomatology.

#### *Stepwise progression*

As with return-to-play, the first step of return-to-learn is relative physical and cognitive rest. Relative cognitive rest involves minimizing potential cognitive stressors, such as school work, video games, reading, texting and watching television. Data from small studies suggest a beneficial effect of cognitive rest on concussion recovery.<sup>48</sup> For the college student-athlete, consideration should be given to avoiding the classroom for at least the same day as the sport-related concussion. The period of time needed to avoid class or homework should be individualized. The gradual return to academics should be based on the absence of concussion symptoms following cognitive exposure. The consensus to date includes:<sup>47,48</sup>

1. If the student-athlete cannot tolerate light cognitive activity, he or she should remain at home or in the residence hall.

2. Once the student-athlete can tolerate cognitive activity without return of symptoms, he/she should return to the classroom, often in graduated increments.

At any point, if the student-athlete becomes symptomatic (i.e., more symptomatic than baseline), or scores on clinical/cognitive measures decline, the team physician should be notified and the student-athlete's cognitive activity reassessed.

The extent of academic adjustments needed should be decided by a multi-disciplinary team that may include the team physician, athletic trainer, faculty athletics representative or other faculty representative, coach, individual teachers, neuropsychologist and psychologist/counselor. The level of multi-disciplinary involvement will vary on a case-by-case basis. The majority of student-athletes who are concussed will not need a detailed return-to-learn program because full recovery typically occurs within two weeks. For the student-athlete whose academic schedule requires some minor modification in the first one to two weeks following a sport-related concussion, adjustments can often be made without requiring meaningful curriculum or testing alterations.

For those student-athletes whose symptoms persist for longer than two weeks, there are differing ways to access academic adjustment or accommodations. The student-athlete may need a change in his or her class schedule; special arrangements may be required for extended absences, tests, term papers and projects. Many institutions offer "provisional or temporary" accommodations for individuals who have impairments that are short-term in nature – six months or less (such as a broken arm or concussion). Such accommodations are often accessed through the disability services office.

A more difficult scenario occurs when the student-athlete experiences prolonged cognitive difficulties. In this case, considerations should include neuropsychological evaluation to: (a) determine the nature and severity of cognitive impairment, and (b) identify the extent to which psychological issues may be present and may be

interacting with the cognitive processes. Institutions can develop a detailed academic plan that specifies the support services available for that student-athlete. The student-athlete can also choose to disclose the documentation to the disability office in order to seek long-term accommodations or academic adjustments. The disability office will verify if the impairment is limiting a major life activity per the Americans with Disabilities Act. Accommodations or academic adjustments are often provided in order to “level the playing field” for the student-athlete with prolonged cognitive difficulties resulting from a concussion. A detailed academic plan coupled with accommodations can provide the needed support for a student-athlete as he or she returns to learning after a concussion.

The successful implementation of return-to-learn depends on several variables:

- Recognition that concussion symptoms vary widely among student-athletes, and even within the same individual who may be suffering a repeat concussion.
- Identification of a point person or case manager for the student-athlete who can navigate the dual obligations of academics and athletics.
- Identification of co-morbid conditions that may impair recovery, such as migraine or other headache conditions, attention-deficit hyperactivity disorder, anxiety and depression or other mood disorders.
- Identification of campus resources that can help assure that student-athletes are provided their full rights during this transition period.

Campus resources vary, and may include the following:

- Learning specialists. Many college campuses have certified learning specialists who have specialized knowledge of medical conditions such as concussion

and post-concussion syndrome. They usually work directly with the disability office.

- Office of disability services. Most campuses have a disability office that is responsible for verifying each student’s impairment under the Americans with Disabilities Act Amendments Act. Sometimes there is a separate disability office and ADA office. In this case the first resource is the campus disability office. Concussion and mild traumatic brain injury are covered under ADA.

It is advisable for the concussed student-athlete’s medical team to identify an academic point person and to be certain this academician is interwoven into the medical management plan. Because return-to-learn is often under-managed and under-recognized, there should also be broad discussions of this important paradigm with athletics departments across the country, engaging organizations such as the National Association of Academic Advisors for Athletics, the American College Personnel Association, NASPA, Student Affairs Administrators in Higher Education, the Coalition on Intercollegiate Athletics, National Athletic Trainers Association, College Athletic Trainers Society, American Medical Society for Sports Medicine and other allied organizations. Student-athletes are more likely to return successfully to full classroom activity in the setting of a proactive and well-integrated management plan.



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# APPENDIX A

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## AGENDA

National Collegiate Athletic Association  
Safety in College Football Summit

Orlando, Florida

February 10-11, 2016

### DAY 1

#### 1. Welcome and summit overview. (Scott Anderson and Brian Hainline)

#### 2. Topic 1: Sensor and clinical data regarding football practice and head exposure.

- a. Campus research. (Stefan Duma, Thomas Druzgal, Jacob Marucci, Jason Mihalik)
- b. Big 12 research. (Scott Anderson, Allen Hardin)
- c. Roundtable discussion and report out.
- d. Referendum: Year-round football practice contact.

#### 3. Topic 2: Catastrophic injury in football.

- a. Traumatic. (Kevin Guskiewicz)
- b. Non-traumatic. (Scott Anderson, Doug Casa)
- c. Roundtable discussion and report out.
- d. Referendum: Action plan for mitigating catastrophic injury in football.

#### 4. Topic 3: Diagnosis and management of sport-related concussion guidelines.

- a. Guidelines overview. (Brian Hainline, Scott Anderson).
- b. Concussion diagnosis and management update: New data from CARE Consortium. (Steven Broglio, Thomas McAllister, Michael McCrea)
- c. Re-examining concussion treatment: Agreements from the TEAM meeting? (Anthony Kontos)
- d. Roundtable discussion and report out.
- e. Referendum: Diagnosis and management of sport-related concussion.

### DAY 2

#### 1. Opening remarks. (Scott Anderson and Brian Hainline)

#### 2. Topic 4: Independent medical care. (Scott Anderson and Brian Hainline)

- a. Roundtable discussion and report out.
- b. Referendum: Independent medical care.

#### 3. Topic 5: Interassociation consensus statements.

- a. Year-round football practice contact.
- b. Catastrophic injury in football.
- c. Diagnosis and management of sport-related concussion.
- d. Independent medical care.

#### 4. Closing remarks.

## SAFETY IN COLLEGE FOOTBALL SUMMIT PARTICIPANTS

- Jeff Allen**, Head Athletic Trainer, University of Alabama (attending on behalf of Nick Saban)
- Scott Anderson**, College Athletics Trainers Society, University of Oklahoma
- Doug Aukerman**, Pacific 12 Conference
- Julian Bailes**, MD, Congress of Neurological Surgeons, American Association of Neurological Surgeons
- Stevie Baker-Watson**, Director of Athletics, DePauw University
- Brad Bankston**, Commissioner, Old Dominion Athletic Conference
- Karl Benson**, Commissioner, Sun Belt Conference
- Bob Boerigter**, Commissioner, Mid-America Intercollegiate Athletics Association
- Bob Bowlsby**, Commissioner, Big 12, Chair, Football Oversight Committee
- Matthew Breiding**, Centers for Disease Control and Prevention
- Steve Broglio**, MD, Principal Investigator CARE Consortium, University of Michigan
- William Bynum**, President, Mississippi Valley State University
- Jeff Bytowski**, DO, American Osteopathic Academy of Sports Medicine
- Carolyn Campbell-McGovern**, Ivy League
- Doug Casa**, Ph.D., Consortium Director, Division on Exertional Injury, National Center for Catastrophic Sport Injury; Chief Executive Officer, Korey Stringer Institute; Director, Athletic Training Education, University of Connecticut
- Bob Casmus**, CSMAS, Catawba College
- Scott Caulfield**, National Strength & Conditioning Association
- Randy Cohen**, National Athletic Trainers' Association
- Bob Colgate**, National Federation of State High School Associations
- Dawn Comstock**, Associate Professor, University of Colorado, Denver
- Julie Cromer Peoples**, Senior Woman Administrator, University of Arkansas Fayetteville
- Kevin Crutchfield**, MD, American Academy of Neurology
- Ty Dennis**, Division II Student-Athlete Advisory Committee, Minnesota State University, Mankato
- Jon Divine**, MD, President, American Medical Society for Sports Medicine
- Tom Dompier**, Ph.D., President, Datalys
- Jason Druzgal**, MD, Neuroradiologist, University of Virginia
- Stefan Duma**, Ph.D., Director, School of Biomedical Engineering and Sciences, Virginia Polytechnic University
- Ruben Echemendia**, Ph.D., President, Sports Neuropsychology Society
- Brent Feland**, MD, Collegiate Strength & Conditioning Coaches' Association
- Scott Gines**, Director of Athletics, Texas A&M University-Kingsville
- Kevin Guskiewicz**, Ph.D., University of North Carolina, Chapel Hill
- Allen Hardin**, Senior Associate Athletics Director, University of Texas
- Steven Hatchell**, President, National Football Foundation
- Bill Heinz**, Chair, Sports Medicine Advisory Committee, NFHS
- Jamie Hixson**, Associate Commissioner, Mountain West Conference
- Peter Indelicato**, American Orthopaedic Society for Sports Medicine
- Nick Inzerello**, Senior Director, Football Development, USA Football
- Jay Jacobs**, SVPC, Auburn University
- Chris Jones**, Division I Football Oversight Committee (proxy), University of Richmond
- Kerry Kenny**, Assistant Commissioner, Public Affairs, Big Ten Conference
- Zachary Kerr**, Director, Datalys

**Anthony Kontos**, Ph.D., Assistant Research Director, Sports Medicine Concussion Program, University of Pittsburgh Medical Center

**William Lawler**, Southeastern Conference

**Josephine Lee**, Board Member, College Athletics Trainers Society

**Donald Lowe**, Board Member, College Athletics Trainers Society

**Jack Marucci**, Louisiana State University

**Thomas McAllister**, MD, Principal Investigator, CARE Consortium

**Michael McCrea**, Ph.D., Principal Investigator, CARE Consortium

**William Meehan**, MD, American Academy of Pediatrics

**Jason Mihalik**, Ph.D., University of North Carolina, Chapel Hill

**Bob Murphy**, Board Member, College Athletics Trainers Society

**Bob Nielson**, Chair, NCAA Rules Committee

**Scott Oliaro**, Board Member, College Athletics Trainers Society

**Kene Orjioke**, Division I Student-Athlete Advisory Committee (SAAC), University of California, Los Angeles

**Steve Pachman**, JD, Montgomery McCracken

**Sourav Poddar**, MD, American College of Sports Medicine

**Kayla Porter**, Division III Student-Athlete Advisory Committee, Frostburg State University

**Rogers Redding**, Secretary Rules Editor, NCAA Football Rules Committee

**Yvette Rooks**, Board Member, College Athletics Trainers Society

**Eric Rozen**, Board Member, College Athletics Trainers Society

**Scott Sailor**, President, National Athletic Trainers' Association

**Jon Steinbrecher**, Commissioner, Mid-American Conference

**Ken Stephens**, National Operating Committee on Standards for Athletic Equipment

**Edward Stewart**, Senior Associate Commissioner, Big 12 Conference

**Michael Strickland**, Senior Associate Commissioner, Atlantic Coast Conference

**Grant Teaff**, Executive Director, American Football Coaches Association

**Buddy Teevens**, Coach, Dartmouth University

**James Tucker**, MD, Board Member, College Athletics Trainers Society

**Steve Walz**, Associate Director of Athletics, University of South Florida

**Alfred White**, Senior Associate Commissioner, Conference USA

## STAFF PARTICIPANTS

**Brian Burnsed**, Associate Director, Communications

**Dawn Buth**, Associate Director, Sport Science Institute

**Cassie Folck**, Coordinator, Sport Science Institute

**Brian Hainline**, Chief Medical Officer, NCAA

**Kathleen McNeely**, Chief Financial Officer, NCAA

**Terrie Meyer**, Executive Assistant, Sport Science Institute

**John Parsons**, Director, Sport Science Institute

**Chris Radford**, Associate Director, Public & Media Relations

**Stephanie Quigg**, Director, Academic & Membership Affairs

## ENDORISING MEDICAL ORGANIZATIONS

American Association of Neurological Surgeons  
American College of Sports Medicine  
American Medical Society for Sports Medicine  
American Orthopaedic Society for Sports Medicine  
American Osteopathic Academy of Sports Medicine  
College Athletic Trainers' Society  
Collegiate Strength and Conditioning Coaches Association  
Competitive Safeguards and Medical Aspects of Sports  
Congress of Neurological Surgeons  
Korey Stringer Institute  
National Athletic Trainers' Association  
National Operating Committee on Standards for Athletic Equipment  
National Strength and Conditioning Association  
Sports Neuropsychology Society



**INTERASSOCIATION CONSENSUS:**

# YEAR-ROUND FOOTBALL PRACTICE CONTACT FOR COLLEGE STUDENT-ATHLETES RECOMMENDATIONS





# PURPOSE

The Second Safety in College Football Summit resulted in interassociation consensus documents for four paramount safety issues in collegiate athletics:

1. Independent medical care for college student-athletes.
2. Diagnosis and management of sport-related concussion.
3. Year-round football practice contact for college student-athletes.
4. Preventing catastrophic injury in college student-athletes.

This document addresses year-round football practice contact for college student-athletes. The final recommendations in this document are the offspring of presentations and discussions during the summit on key items that address safety and head impact exposure in football. Following the presentations and discussions, endorsing organization representatives agreed on foundational statements and practice contact limitation statements that became the basis for a draft consensus paper that was reviewed further by relevant stakeholders and the endorsing organizations. The final, endorsed year-round football practice contact recommendations for college student-athletes follow.

This document is divided into the following sections:

## **BACKGROUND**

This section provides an overview of the challenges of football practice as an aggressive, rugged, contact sport.

## **DATA-DRIVEN DECISION MAKING**

This section provides an overview of emerging data relevant to guiding decision-making for football practice contact.

## **FOUNDATIONAL STATEMENTS**

This section outlines the concepts in the statements that were voted on by representatives of medical and football organizations during the summit, and provides a rationale for the statements.

## **YEAR-ROUND FOOTBALL PRACTICE CONTACT FOR COLLEGE STUDENT-ATHLETES RECOMMENDATIONS**

This section provides the final, endorsed recommendations of the medical and football organizations for revised year-round football practice for college student-athletes.

## **REFERENCES**

This section provides the relevant references for this document.

## **APPENDICES**

This section lists the agenda, summit attendees and medical/football organizations that have endorsed or affirmed the value of this document.



## BACKGROUND

Football is an aggressive, rugged, contact sport, yet the rules clearly state that there is no place for maneuvers deliberately designed to inflict injury on another player.<sup>1</sup> Rules changes disallowing the head as the point of contact in tackling have yielded behavioral change resulting in marked reduction of catastrophic cervical spine injury and death.<sup>2</sup> Rules enforcement is critical for player safety.<sup>3</sup> Because football practices remain a major source of injury, including concussion and repetitive head impact exposure in all three NCAA division football practices,<sup>4</sup> enhancing a culture of safety in college football practice is foundational and the basis for bringing college athletics stakeholders to a summit in 2014 and reconvening in 2016.

The 2014 Safety in College Football Summit document, “Inter-Association Consensus: Year-Round Football Practice Contact Guidelines,”<sup>5</sup> states that no more than two live contact inseason practices per

week are allowed in college football. In that document, live contact is defined as: “Any practice that involves live tackling to the ground and/or live or full-speed blocking. Live-contact practice may occur in full-pad or half-pad (also known as ‘shell,’ in which the player wears shoulder pads and shorts, with or without thigh pads). Live contact does not include ‘thud’ sessions or drills that involve ‘wrapping up,’ during which players are not taken to the ground and contact is not aggressive in nature. Live contact practices are to be conducted in a manner consistent with existing rules that prohibit targeting to the head or neck area with the helmet, forearm, elbow, or shoulder, or the initiation of contact with the helmet.” In 2015, the Big 12 Conference adopted a conference-wide limit on inseason live contact exposures in practice or competition to no more than two times per week, including game-day, and this was associated with a decreased incidence of practice concussions.<sup>6</sup> In 2016, the Ivy League voted to

eliminate all inseason live tackling practices, although contact is still permitted and not specified further.<sup>7</sup>

Football practices allow for improved conditioning plus mastery of technique and skill, and are deemed under the control of the coach. Contemporary research in NCAA football reveals that the risk of concussion is greater in practices that allow tackling versus practices that allow contact without tackling.<sup>6</sup> Such research also reveals that head-to-head contact carries a greater risk of concussion in football than head-to-ground contact.<sup>4,6</sup> While the intensity and pace of a game is difficult to control, practice should be intentionally managed to limit player-to-player contact, particularly head-to-head, i.e. ‘taking the head out of the game.’ The fundamental cause of concussion is impact to the head. Intentional contact with or to a helmet is illegal in football and has no place in practice or competition. Avoidance of such helmet use warrants rigorous emphasis in practice and enforcement in competition.<sup>8</sup>

Because contact practices carry a greater risk of concussion than non-contact practices,<sup>6</sup> defining “contact” is necessary, albeit daunting. The continuing rationale for defining and reducing live contact practice is to improve safety, including possibly decreasing athlete exposure for concussion—including repeat concussion—and overall head impact exposure.<sup>9-15</sup> The biomechanical threshold (acceleration/deceleration) at which sport-related concussion occurs is unknown.<sup>16</sup> Data supports football players are more frequently diagnosed with sport-related concussion on days with increased frequency and higher magnitude of head impact.<sup>11,17-19</sup> However, there are no conclusive data for understanding the short- or long-term clinical sequelae of exposure to repetitive head impacts.

In addition to lowering concussion and repetitive head impact exposure risk, reduced frequency of live contact practice may also allow more time for teaching of proper tackling technique. Practice affords teaching technique. In particular, tackling and blocking should

be performed with technique emphasizing hands and shoulder contact and elimination of head contact.

“Performance” is the expression of sport, and performance is impaired following concussion.<sup>6,20-23</sup> Less obvious is that impaired performance may persist for weeks or months following concussion. For example, diminished performance plagues concussed major league baseball players even as symptoms have subsided, post-concussion testing has returned to pre-injury levels and they have returned to full participation. In particular, batting average, on-base percentage, slugging percentage and on-base plus slugging are diminished two weeks after return to play following concussion.<sup>24</sup> Vestibular dysfunction, which is common after concussion, often persists in football players following concussion, which can impede performance and predispose to injury.<sup>25-27</sup> Visual and sensory performance are factors key to any athlete and “... may influence an individual’s ability to interpret environmental cues, anticipate opponents’ actions and create appropriate motor responses ....”<sup>28</sup> Research demonstrates that these deficits may persist in football players despite no longer displaying any concussion related symptoms and being cleared by their team physician to return to participation.<sup>28</sup> Minimizing concussion risk and head contact exposure is part of “safe” football, which continues to mean “good” football.



## DATA-DRIVEN DECISION MAKING

Emerging data from the historic NCAA-Department of Defense CARE Consortium study, which is part of the larger NCAA-DoD Grand Alliance, are helping to shape a science-driven approach to addressing concussion and head impact exposure in sport.<sup>29-30</sup> In addition, many NCAA member schools have obtained important clinical and accelerometer data in football. Such emerging data, coupled with available science, were presented and discussed at the Second Safety in College Football Summit. Following presentations and discussions, all attendees were invited to weigh in on “foundational statements” and updated football practice contact guidelines. Foundational statements and recommendations were amended based on feedback, and when

more than 80 percent consensus was reached among the participants, the statements and recommendations were then voted on by representatives of both medical and football endorsing organizations (see Appendix C for endorsing organizations). Only those statements and recommendations that were agreed upon by 100 percent of both endorsing organization representatives were then placed into this document for further review and final endorsement. We revised the foundational statements for this document and updated football practice contact guidelines with recommendations that follow, including a brief synopsis of the rationale that was agreed upon by the endorsing organization representatives.

# FOUNDATIONAL STATEMENTS

The following foundational statements (**in bold**) were approved at the summit, with discussion points that follow.

**Head accelerometers are currently unable to function as concussion detectors.**

One can envision a future in which head impact exposure data can be individualized for each football player, and thus general football contact guidelines that apply to an entire team would no longer be necessary. At this point in time, the science of accelerometers, and accelerometer data coupled with clinical outcomes, are inadequate to provide such guidance.<sup>31-33</sup> Although accelerometers are improving in providing head impact kinematics, all have limitations, ranging from inaccuracy in counting head impacts, measuring head acceleration, over-predicting rotational acceleration or inadequate field testing relative to dummy testing. Furthermore, there is no clear relationship between accelerometer measurements and clinical outcome.<sup>34-35</sup> Thus, general guidelines for football practice are still necessary until the science of accelerometers can provide individualized guidance.

**Head accelerometers can be utilized to assess group differences among types of football practices and competition.**

Although head accelerometers cannot provide individualized data that allows a personalized approach to head contact exposure, the science has advanced sufficiently to allow group differences among various positions (e.g., lineman, safety, quarterback) with regard to head impact exposure risk.<sup>36</sup> Such data can guide coaches and the medical team in devising a head contact exposure reduction plan for various football positions.

**Offensive and defensive linemen have a greater likelihood of sustaining repetitive head impact during practice.**

Analysis of group accelerometer data provide evidence that offensive and defensive linemen are exposed to more frequent repetitive head impacts during practice than football players in other positions.<sup>36-37</sup> As emerging evidence points to both the importance of understanding the management of concussion, there is also emerging evidence that cumulative head impact exposure needs to be better understood with regard to long-term neurologic sequelae.<sup>38</sup> Coaches and clinicians should be mindful of reducing unnecessary head impact exposure among offensive and defensive linemen. For example, there may be significant helmet-to-helmet contact between linemen even in individual line board drills, “pass pro” or one-on-one blocking, often as a result of poor technique such as offensive linemen dropping their heads and defensive linemen not using their hands.

**Across practice, the preseason period has the highest rate of concussion.**

Just as the acclimatization rule was put in place to address the documented increased risk of heat illness during preseason, emerging data inform us that preseason is also a time of considerable increased injury risk in general and concussion risk in particular.<sup>6,39</sup> Indeed, conference-wide data inform us that preseason practices have the highest injury rate of any practices, and 58 percent of all-season practice concussions occur during preseason.<sup>6</sup>

**Contact tackling practice carries a greater risk of concussion than contact non-tackling practice.**

As concussion risk is in part mediated by contact/collision forces, it makes intuitive sense that concussion risk is increased when comparing contact tackling practice to contact non-tackling practice.<sup>6</sup> Such data help inform decision making for football practice guidelines, differentiating the higher concussion risk practice of contact with tackling versus the lower concussion risk practice of contact without tackling.

Proper tackling is an essential aspect of the sport of football, and thus the concussive risk of learning proper tackling technique must be balanced with the unforeseen risks of tackling with improper technique.

**Tackling and blocking should be performed with technique emphasizing hands and shoulder contact and elimination of head contact.**

Proper tackling means that the helmet is not utilized as a weapon, which increases the chance of catastrophic injury. Minimizing head contact in both tackling and blocking is an important learned technique that not only lessens head impact exposure, but also decreases overall injury risk.<sup>4,40</sup>

**Head-to-head contact accounts for the greatest risk of concussion, followed by head-to-ground contact.**

Helmets cannot eliminate all concussion risk, but rather minimize the risk of skull fracture and intracranial hemorrhage.<sup>41</sup> The helmet should not be used as part of football technique in tackling or blocking and should simply serve as protective gear. Thus, blocking and tackling technique must minimize all head-to-head contact, which would decrease concussion risk.<sup>4,40</sup> Furthermore, live tackling to the ground must be practiced safely and with less regularity in order to decrease concussion risk in football practice.

**Full pad practice, shell practice and helmet only practice all carry a risk of concussion. No helmet and no shoulder pad practice is the only evidence-based non-contact practice with negligible concussion risk.**

Even with the best of intent, emerging data inform us that football practice with equipment leads to behavior that increases concussion risk.<sup>6,17</sup> That being said, wearing full pads in practice can be utilized for conditioning purposes, and helmets may protect the skull from fracture due to inadvertent falls to the ground or other types of collisions. Thus, coaches and clinicians need to balance equipment as a conditioning/protection factor versus equipment that may lead to increased head impact exposure. Importantly, data can

drive the intent of practice, and the nature of non-contact practice was discussed considerably during the summit. Although we have data that practices without helmet and shoulder pad are the only evidence-based non-contact practice with negligible concussion risk, we do not have data on potential downside risks of practicing without equipment.

*Given this foundational data, a post-meeting consensus was developed regarding the following definitions, with the intent of providing a framework on varying intensity levels from non-contact/minimal contact practices to live contact/tackling to the ground practices. This framework is consistent with USA Football as follows (italicized content is from USA Football):*

**Non-contact/minimal contact practices do not involve tackling, thud, “wrapping up” or full-speed blocking. Non-contact/minimal contact practices are those practices in which drills are not run at a competitive speed, as follows:**

- *Air. Players run a drill unopposed without contact.*
- *Bags. Drill is run against a bag or other soft-contact surface.*
- *Control. Drill is run at an assigned speed until the moment of contact. One player is designated by the coach ahead of time as the pre-determined winner. Contact remains above the waist and players stay on their feet.*

**Live contact/thud is any practice in which players are not taken to the ground, including “thud” sessions or drills that involve “wrapping up,” irrespective of uniform worn.**

*Drill is run at competitive speed through the moment of contact with no predetermined winner. Contact remains above the waist, players stay on their feet and a quick whistle ends the drill.* This definition provides a foundation for differentiating the increased concussion risk in live contact/tackling versus live contact practice that does not include tackling to the ground.

**Live contact/tackling is any practice that involves tackling to the ground.**

*Drill is run in game like conditions and is the only time that players are taken to the ground.* This definition provides a foundation for allowances of live contact/tackling practice during the season, and differentiates live contact/tackling (which carries a higher concussion risk) from other types of contact practice.

**Preseason practice: In any given seven days following the five-day acclimation period:**

- **Up to three days of practice may be live contact (tackling or thud).**
- **There must be three non-contact/minimal contact practices in a given week.**
- **A non-contact/minimal contact practice must also follow a scrimmage.**
- **One day must be no football practice.**

Preseason is an intense practice time that focuses on proper conditioning and mastery of football technique, including tackling and blocking. Emerging data help us to make informed decisions that balance conditioning and mastery of technique with safety. Based on the increased risk of concussion in preseason and emerging data regarding the importance of recovery, non-contact/minimal contact days must be factored into the week's schedule, and live contact needs to be decreased relative to prior preseason guidelines. As noted above, non-contact/minimal contact practice is conducted with the intent of a practice without shoulder pads or helmet. Coaches and medical staff should be cognizant of the behavioral risk of increased head impact exposure when equipment is worn.

**Preseason practice: Two-a-day practices should not occur. A second session of activity can include walk-throughs or meetings.**

Recovery is multi-dimensional, and proper recovery not only decreases the risk of exertional heat illness and overuse injuries, but also plays an important role in decreasing the risk of exertion after repetitive head impact exposure or possible concussion. In this regard, football is different from other sports where an initial practice does not involve potential repetitive head

impact or concussion. Thus, the benefit of improved conditioning and technique mastery from two-a-day practices must be mitigated by the increased risk of catastrophic injury and concussion. Importantly, walk-throughs or meetings do not include any conditioning activities.

**Inseason practice (all divisions):**

- **Three days of practice should be non-contact/minimal contact.**
- **One day of live contact/tackling is allowed.**
- **One day of live contact/thud is allowed.**

Inseason practices provide an ongoing opportunity to maintain/improve conditioning and to further master proper technique. This opportunity must always be balanced with recovery from potential head impact exposure and minimizing head impact exposure while learning the essential aspects of blocking and tackling.

**Postseason and bowl practices must be separated from inseason practice because there can be up to six weeks of non-competition time between the end of the season and the next bowl or postseason game.**

This time period provides an opportunity for refinement in skill and technique on the one hand, while providing an opportunity for more intense training for those team players who have had little to no game experience. Although there was no foundational statement regarding postseason practice, a consensus developed following much discussion with key stakeholders as follows:

- If there is a two-week or less period of time between the final regular-season game or conference championship game (for participating institutions) and the next bowl or postseason game, then inseason practice recommendations should remain in place.
- If there is greater than two weeks between the final regular-season game or conference championship game (for participating institutions) and the next bowl or postseason game, then:
  - ◊ Up to three days may be live-contact (two of which should be live contact/thud).
  - ◊ There must be three non-contact/minimal contact practices in a given week.



- ◊ The day preceding and following live contact/tackling should be non-contact/minimal contact or no football practice.
- ◊ One day must be no football practice.

**Spring practice (Division I/Division II): The day following live scrimmage should be non-contact/minimal contact.**

This follows the theme of the importance of recovery following increased risk of head impact exposure from live scrimmage.

**Year-round training (Division I): Coaches may work with players for two hours a week on football skills (with use of footballs, sleds, dummies, etc.) without helmets or pads during the following times:**

- Before and after spring football during the school year.
- For four weeks over the summer.

- This can include 7-on-7 and team work of full offensive and defensive plays; all must be non-contact.
- This will be included in the eight-hour Countable Athletically Related Activities (CARA) time.

***Note:** Although this foundational statement was embraced at the time of the summit because of the possibility of further improving technique during the off-season, it is not part of the final recommendations. CARA is an evolving concept within the NCAA and there are practical and legislative concerns about incorporating this concept into a formal recommendation at present. Furthermore, there is broad consensus by members of the American Football Coaches Association that the additional offseason time with coaches could have negative, unforeseen consequences.*



# YEAR-ROUND FOOTBALL PRACTICE CONTACT FOR COLLEGE STUDENT-ATHLETES RECOMMENDATIONS

The above foundational statements became the basis for the year-round football practice contact recommendations below, which must be differentiated from legislation. As these recommendations are based on consensus and emerging science, they are best viewed as a “living, breathing” document that will be updated, as we have with other health and safety interassociation guidelines, best practices and recommendations, based on emerging science or sound observations that result from application of such documents. The intent is to reduce injury risk, but we must also be attentive to unintended consequences of shifting a practice paradigm based on consensus.

## **Preseason practice recommendations**

Two-a-day practices are not recommended. A second session of no helmet/pad activity may include walk-throughs or meetings; conditioning in the second session of activity is not allowed.

The preseason may be extended by one week in the calendar year to accommodate the lost practice time from elimination of two-a-days, and to help ensure that players obtain the necessary skill set for competitive play.

In any given seven days following the five-day acclimation period:

- Up to three days of practice can be live contact (tackling or thud).
- There should be a minimum of three non-contact/minimal contact practices in a given week.
- A non-contact/minimal contact practice should follow a scrimmage.
- One day should be no football practice.

## *Difference from the 2014 guidelines:*

1. Recommendation to discontinue two-a-day practices.
2. Recommendation to allow an extension of the preseason by one week. This requires a legislative change if the preseason begins one week earlier.
3. Recommendation to reduce weekly live contact practices from four to three.
4. Non-contact/minimal contact practice recommendations have been added.
5. Non-contact/minimal contact practice recommendation the day following a scrimmage has been added.
6. One day of no football practice recommendation has been added.
7. Legislation 17.10.2.1 would need to be updated if the preseason practice time *begins* one week earlier.

## **Inseason practice recommendations**

Inseason is defined as the period between six days prior to the first regular-season game and the final regular-season game or conference championship game (for participating institutions).

In any given week:

- Three days of practice should be non-contact/minimal contact.
- One day of live contact/tackling should be allowed.
- One day of live contact/thud should be allowed.

## *Difference from the 2014 guidelines:*

1. Recommendation to no longer allow two live contact/tackling days per week.
2. Non-contact day/minimal contact recommendations have been added.



### **Postseason practice recommendations**

NCAA Championships (Football Championship Subdivision/Division II/Division III), bowl (Football Bowl Subdivision)

- If there is a two-week or less period of time between the final regular-season game or conference championship game (for participating institutions) and the next bowl or postseason game, then inseason practice recommendations should remain in place.
- If there is greater than two weeks between the final regular-season game or conference championship game (for participating institutions) and the next bowl or postseason game, then:
  - ◊ Up to three days may be live-contact (two of which should be live contact/thud).
  - ◊ There must be three non-contact/minimal contact practices in a given week.
  - ◊ The day preceding and following live contact/tackling should be non-contact/minimal contact or no football practice.
  - ◊ One day must be no football practice.

*Difference from the 2014 guidelines:*

1. Current guidelines do not differentiate postseason/ bowl practice from inseason practice.

### **Spring practice recommendations**

(Divisions I and II)

- Of the 15 allowable sessions that may occur during the spring practice season, eight practices may involve live contact (tackling or thud); three of these live contact practices may include greater than 50 percent live contact (scrimmages). Live contact practices should be limited to two in a given week and should not occur on consecutive days. The day following live scrimmage should be non-contact/minimal contact.

*Difference from the 2014 guidelines:*

1. Non-contact/minimal contact practice recommendation the day following live scrimmage.

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## AGENDA

National Collegiate Athletic Association  
Safety in College Football Summit

Orlando, Florida

February 10-11, 2016

### DAY 1

#### 1. Welcome and summit overview. (Scott Anderson and Brian Hainline)

#### 2. Topic 1: Sensor and clinical data regarding football practice and head exposure.

- a. Campus research. (Stefan Duma, Thomas Druzgal, Jacob Marucci, Jason Mihalik)
- b. Big 12 research. (Scott Anderson, Allen Hardin)
- c. Roundtable discussion and report out.
- d. Referendum: Year-round football practice contact.

#### 3. Topic 2: Catastrophic injury in football.

- a. Traumatic. (Kevin Guskiewicz)
- b. Non-traumatic. (Scott Anderson, Doug Casa)
- c. Roundtable discussion and report out.
- d. Referendum: Action plan for mitigating catastrophic injury in football.

#### 4. Topic 3: Diagnosis and management of sport-related concussion guidelines.

- a. Guidelines overview. (Brian Hainline, Scott Anderson).
- b. Concussion diagnosis and management update: New data from CARE Consortium.  
(Steven Broglio, Thomas McAllister, Michael McCrea)
- c. Re-examining concussion treatment: Agreements from the TEAM meeting? (Anthony Kontos)
- d. Roundtable discussion and report out.
- e. Referendum: Diagnosis and management of sport-related concussion.

### DAY 2

#### 1. Opening remarks. (Scott Anderson and Brian Hainline)

#### 2. Topic 4: Independent medical care. (Scott Anderson and Brian Hainline)

- a. Roundtable discussion and report out.
- b. Referendum: Independent medical care.

#### 3. Topic 5: Inter-association consensus statements.

- a. Year-round football practice contact.
- b. Catastrophic injury in football.
- c. Diagnosis and management of sport-related concussion.
- d. Independent medical care.

#### 4. Closing remarks.

## SAFETY IN COLLEGE FOOTBALL SUMMIT PARTICIPANTS

**Jeff Allen**, Head Athletic Trainer, University of Alabama (attending on behalf of Nick Saban)

**Scott Anderson**, College Athletics Trainers Society, University of Oklahoma

**Doug Aukerman**, Pacific 12 Conference

**Julian Bailes**, MD, Congress of Neurological Surgeons, American Association of Neurological Surgeons

**Stevie Baker-Watson**, Director of Athletics, DePauw University

**Brad Bankston**, Commissioner, Old Dominion Athletic Conference

**Karl Benson**, Commissioner, Sun Belt Conference

**Bob Boerigter**, Commissioner, Mid-America Intercollegiate Athletics Association

**Bob Bowlsby**, Commissioner, Big 12, Chair, Football Oversight Committee

**Matthew Breiding**, Centers for Disease Control and Prevention

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**William Bynum**, President, Mississippi Valley State University

**Jeff Bytomski**, DO, American Osteopathic Academy of Sports Medicine

**Carolyn Campbell-McGovern**, Ivy League

**Doug Casa**, Ph.D., Consortium Director, Division on Exertional Injury, National Center for Catastrophic Sport Injury; Chief Executive Officer, Korey Stringer Institute; Director, Athletic Training Education, University of Connecticut

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**Scott Caulfield**, National Strength & Conditioning Association

**Randy Cohen**, National Athletic Trainers' Association

**Bob Colgate**, National Federation of State High School Associations

**Dawn Comstock**, Associate Professor, University of Colorado, Denver

**Julie Cromer Peoples**, Senior Woman Administrator, University of Arkansas Fayetteville

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**Peter Indelicato**, American Orthopaedic Society for Sports Medicine

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**Kerry Kenny**, Assistant Commissioner, Big Ten Conference

**Zachary Kerr**, Director, Datalys

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**William Lawler**, Southeastern Conference

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Association

**Jon Steinbrecher**, Commissioner, Mid-American  
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**Ken Stephens**, National Operating Committee on  
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**Edward Stewart**, Senior Associate Commissioner,  
Big 12 Conference

**Michael Strickland**, Senior Associate  
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**Grant Teaff**, Executive Director, American Football  
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**Buddy Teevens**, Coach, Dartmouth University

**James Tucker**, MD, Board Member, College  
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**Brian Hainline**, Chief Medical Officer, NCAA

**Kathleen McNeely**, Chief Financial Officer, NCAA

**Terrie Meyer**, Executive Assistant, Sport Science Institute

**John Parsons**, Director, Sport Science Institute

**Chris Radford**, Associate Director, Public & Media Relations

**Stephanie Quigg**, Director, Academic & Membership Affairs

# APPENDIX C

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## ENDORISING MEDICAL ORGANIZATIONS

American Academy of Neurology (*Affirmation of Value*)  
American Association of Neurological Surgeons  
American Academy of Pediatrics  
American College of Sports Medicine  
American Medical Society for Sports Medicine  
American Orthopaedic Society for Sports Medicine  
American Osteopathic Academy of Sports Medicine  
College Athletic Trainers' Society  
Collegiate Strength and Conditioning Coaches Association  
Competitive Safeguards and Medical Aspects of Sports  
Congress of Neurological Surgeons  
Korey Stringer Institute  
National Athletic Trainers' Association  
National Operating Committee on Standards for Athletic Equipment  
National Strength and Conditioning Association  
Sports Neuropsychology Society

## ENDORISING FOOTBALL ORGANIZATIONS

American Football Coaches Association  
National Football Foundation  
NCAA Football Oversight Committee  
NCAA Football Rules Committee  
USA Football





**INTERASSOCIATION CONSENSUS:**

# INDEPENDENT MEDICAL CARE FOR COLLEGE STUDENT-ATHLETES BEST PRACTICES



# PURPOSE

The Second Safety in College Football Summit resulted in interassociation consensus recommendations and best practices for four paramount safety issues in collegiate athletics:

1. Independent medical care for college student-athletes.
2. Diagnosis and management of sport-related concussion.
3. Year-round football practice contact for college student-athletes.
4. Preventing catastrophic injury in college student-athletes.

This document addresses independent medical care for college student-athletes for all sports. Following a presentation<sup>1</sup> that delineated how “Interassociation Consensus: Independent Medical Care for College Student-Athletes Guidelines”<sup>2</sup> became the foundation for NCAA Autonomy legislation on independent medical care, the endorsing organization representatives agreed that the updated consensus on Interassociation Consensus: Independent Medical Care for College Student-Athletes Best Practices should be consistent with the Autonomy legislation.

This document is divided into the following sections:

## **BACKGROUND**

This section provides an overview of the challenges of providing independent medical care for all college student-athletes.

## **INDEPENDENT MEDICAL CARE FOR COLLEGE STUDENT-ATHLETES BEST PRACTICES**

This section provides the final, endorsed recommendations of the medical organizations for revised independent medical care for college student-athlete best practices.

## **REFERENCES**

This section provides the relevant references for this document.

## **APPENDICES**

This section lists the agenda, summit attendees and medical organizations that endorsed this document.



## BACKGROUND

Diagnosis, management and return-to-play determinations for the college student-athlete are the responsibility of the institution's primary athletics healthcare providers (team physicians and athletic trainers).<sup>3</sup> Even though some have cited a potential tension between health and safety in athletics,<sup>4-5</sup> collegiate athletics endeavor to conduct programs in a manner designed to address the physical well-being of college student-athletes (i.e., to balance health and performance).<sup>6-9</sup> In the interest of the health and welfare of collegiate student-athletes, a student-athlete's healthcare providers must have clear authority for student-athlete care. The foundational approach for independent medical care is to assume an "athlete-centered care" approach, which is similar to the more general "patient-centered care," which refers to the delivery of health care services that are focused only on the individual patient's needs and concerns.<sup>10-14</sup> The following 10 guiding principles, listed in the "Interassociation Consensus Statement on Best Practices for Sports Medicine Management for Secondary Schools

and Colleges,"<sup>14</sup> are paraphrased below to provide an example of policies that can be adopted that help to assure independent, objective medical care for college student-athletes:

1. The physical and psychosocial welfare of the individual student-athlete should always be the highest priority of the athletic trainer and the team physician.
2. Any program that delivers athletic training services to student-athletes should always have a designated medical director.
3. Sports medicine physicians and athletic trainers should always practice in a manner that integrates the best current research evidence within the preferences and values of each student-athlete.
4. The clinical responsibilities of an athletic trainer should always be performed in a manner that is consistent with the written or verbal instructions of a physician or standing orders and clinical management protocols that have been approved by a program's designated medical director.

5. Decisions that affect the current or future health status of a student-athlete who has an injury or illness should only be made by a properly credentialed health professional (e.g., a physician or an athletic trainer who has a physician's authorization to make the decision).
6. In every case that a physician has granted an athletic trainer the discretion to make decisions relating to an individual student-athlete's injury management or sports participation status, all aspects of the care process and changes in the student-athlete's disposition should be thoroughly documented.
7. Coaches must not be allowed to impose demands that are inconsistent with guidelines and recommendations established by sports medicine and athletic training professional organizations.
8. An athletic trainer's role delineation and employment status should be determined through a formal administrative role for a physician who provides medical direction.
9. An athletic trainer's professional qualifications and performance evaluations must not be primarily judged by administrative personnel who lack health care expertise, particularly in the context of hiring, promotion and termination decisions.
10. Member institutions should adopt an administrative structure for delivery of integrated sports medicine and athletic training services to minimize the potential for any conflicts of interest that could adversely affect the health and well-being of student-athletes.

The unchallengeable, autonomous authority of primary athletics healthcare providers to determine medical management and return-to-play decisions becomes the linchpin for independent medical care of student-athletes. Importantly, this linchpin in college sports is the team effort of both physicians and athletic trainers, with ultimate medical reporting authority being the team physician.<sup>15</sup> The NCAA Sports Medicine Handbook's Guideline 1B opens with a charge to athletics and institutional leadership to "create an administrative system where athletics healthcare professionals—team physicians and athletic trainers—are able to make medical decisions with only the best interests of student-athletes at the forefront."<sup>3</sup> Multiple models

exist for collegiate sports medicine. Primary athletics healthcare providers may report to the athletics department, student health services, the institution's medical school, a private medical practice or a combination thereof. Irrespective of model, the answer for the college student-athlete is established medical decision-making independence for appointed primary athletics healthcare providers.<sup>13</sup>

Athletics healthcare administration is one of the strategic priorities of the NCAA Sport Science Institute.<sup>16</sup> Athletics healthcare administration refers to the manner in which healthcare services are delivered within the athletics department of a member institution. Even if there is an extraordinary medical team in place, medical healthcare delivery will suffer if such care does not have an efficient and well-rehearsed delivery system. To help provide oversight in efficient and well-rehearsed delivery of medical care, member schools should designate a director of medical services. This individual will be generally responsible with administrative oversight of the delivery of student-athlete health care and will ensure an administrative structure that provides independent medical care to student-athletes. This individual should be familiar with healthcare administration but does not need to be a licensed physician. This administrative role may include assuring that schools are compliant with all pertinent NCAA health and safety legislation and with interassociation consensus statements that impact student-athlete health and safety. Because this position is administrative in nature, it does not reflect the normal medical-legal hierarchy of healthcare practitioners. Healthcare practitioners can have dual roles. For example, athletic trainers deliver healthcare under the direction of a licensed physician; however, an athletic trainer could concomitantly serve as the director of medical services in a purely administrative role.



## INDEPENDENT MEDICAL CARE FOR COLLEGE STUDENT-ATHLETES BEST PRACTICES

Institutional line of medical authority should be established in the sole interest of student-athlete health and safety. An active member institution should establish an administrative structure that provides independent medical care and affirms the unchallengeable autonomous authority of primary athletics health care providers (team physicians and athletic trainers) to determine medical management and return-to-play decisions related to student-athletes.

In addition to an administrative structure that assures such authority of primary athletics health care provid-

ers, an active institution should designate a director of medical services to oversee the institution's athletic health care administration and delivery.

**Note:** Upon the suggestion of the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports, the term "Director of Medical Services" has been changed to "Athletics Health Care Administrator" in the legislative language. This intent of this proposed terminology is to stress the administrative nature of this position, with no change otherwise in the function of this position.

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# APPENDIX A

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## AGENDA

National Collegiate Athletic Association  
Safety in College Football Summit

Orlando, Florida

February 10-11, 2016

### DAY 1

#### 1. Welcome and summit overview. (Scott Anderson and Brian Hainline)

#### 2. Topic 1: Sensor and clinical data regarding football practice and head exposure.

- a. Campus research. (Stefan Duma, Thomas Druzgal, Jacob Marucci, Jason Mihalik)
- b. Big 12 research. (Scott Anderson, Allen Hardin)
- c. Roundtable discussion and report out.
- d. Referendum: Year-round football practice contact.

#### 3. Topic 2: Catastrophic injury in football.

- a. Traumatic. (Kevin Guskiewicz)
- b. Non-traumatic. (Scott Anderson, Doug Casa)
- c. Roundtable discussion and report out.
- d. Referendum: Action plan for mitigating catastrophic injury in football.

#### 4. Topic 3: Diagnosis and management of sport-related concussion guidelines.

- a. Guidelines overview. (Brian Hainline, Scott Anderson).
- b. Concussion diagnosis and management update: New data from CARE Consortium. (Steven Broglio, Thomas McAllister, Michael McCrea)
- c. Re-examining concussion treatment: Agreements from the TEAM meeting? (Anthony Kontos)
- d. Roundtable discussion and report out.
- e. Referendum: Diagnosis and management of sport-related concussion.

### DAY 2

#### 1. Opening remarks. (Scott Anderson and Brian Hainline)

#### 2. Topic 4: Independent medical care. (Scott Anderson and Brian Hainline)

- a. Roundtable discussion and report out.
- b. Referendum: Independent medical care.

#### 3. Topic 5: Interassociation consensus statements.

- a. Year-round football practice contact.
- b. Catastrophic injury in football.
- c. Diagnosis and management of sport-related concussion.
- d. Independent medical care.

#### 4. Closing remarks.

## SAFETY IN COLLEGE FOOTBALL SUMMIT PARTICIPANTS

- Jeff Allen**, Head Athletic Trainer, University of Alabama (attending on behalf of Nick Saban)
- Scott Anderson**, College Athletics Trainers Society, University of Oklahoma
- Doug Aukerman**, Pacific 12 Conference
- Julian Bailes**, MD, Congress of Neurological Surgeons, American Association of Neurological Surgeons
- Stevie Baker-Watson**, Director of Athletics, DePauw University
- Brad Bankston**, Commissioner, Old Dominion Athletic Conference
- Karl Benson**, Commissioner, Sun Belt Conference
- Bob Boerigter**, Commissioner, Mid-America Intercollegiate Athletics Association
- Bob Bowlsby**, Commissioner, Big 12, Chair, Football Oversight Committee
- Matthew Breiding**, Centers for Disease Control and Prevention
- Steve Broglio**, MD, Principal Investigator CARE Consortium, University of Michigan
- William Bynum**, President, Mississippi Valley State University
- Jeff Bytowski**, DO, American Osteopathic Academy of Sports Medicine
- Carolyn Campbell-McGovern**, Ivy League
- Doug Casa**, Ph.D., Consortium Director, Division on Exertional Injury, National Center for Catastrophic Sport Injury; Chief Executive Officer, Korey Stringer Institute; Director, Athletic Training Education, University of Connecticut
- Bob Casmus**, CSMAS, Catawba College
- Scott Caulfield**, National Strength & Conditioning Association
- Randy Cohen**, National Athletic Trainers' Association
- Bob Colgate**, National Federation of State High School Associations
- Dawn Comstock**, Associate Professor, University of Colorado, Denver
- Julie Cromer Peoples**, Senior Woman Administrator, University of Arkansas Fayetteville
- Kevin Crutchfield**, MD, American Academy of Neurology
- Ty Dennis**, Division II Student-Athlete Advisory Committee, Minnesota State University, Mankato
- Jon Divine**, MD, President, American Medical Society for Sports Medicine
- Tom Dompier**, Ph.D., President, Datalys
- Jason Druzgal**, MD, Neuroradiologist, University of Virginia
- Stefan Duma**, Ph.D., Director, School of Biomedical Engineering and Sciences, Virginia Polytechnic University
- Ruben Echemendia**, Ph.D., President, Sports Neuropsychology Society
- Brent Feland**, MD, Collegiate Strength & Conditioning Coaches' Association
- Scott Gines**, Director of Athletics, Texas A&M University-Kingsville
- Kevin Guskiewicz**, Ph.D., University of North Carolina, Chapel Hill
- Allen Hardin**, Senior Associate Athletics Director, University of Texas
- Steven Hatchell**, President, National Football Foundation
- Bill Heinz**, Chair, Sports Medicine Advisory Committee, NFHS
- Jamie Hixson**, Associate Commissioner, Mountain West Conference
- Peter Indelicato**, American Orthopaedic Society for Sports Medicine
- Nick Inzerello**, Senior Director, Football Development, USA Football
- Jay Jacobs**, SVPC, Auburn University
- Chris Jones**, Division I Football Oversight Committee (proxy), University of Richmond
- Kerry Kenny**, Assistant Commissioner, Public Affairs, Big Ten Conference
- Zachary Kerr**, Director, Datalys



**Anthony Kontos**, Ph.D., Assistant Research Director, Sports Medicine Concussion Program, University of Pittsburgh Medical Center

**William Lawler**, Southeastern Conference

**Josephine Lee**, Board Member, College Athletics Trainers Society

**Donald Lowe**, Board Member, College Athletics Trainers Society

**Jack Marucci**, Louisiana State University

**Thomas McAllister**, MD, Principal Investigator, CARE Consortium

**Michael McCrea**, Ph.D., Principal Investigator, CARE Consortium

**William Meehan**, MD, American Academy of Pediatrics

**Jason Mihalik**, Ph.D., University of North Carolina, Chapel Hill

**Bob Murphy**, Board Member, College Athletics Trainers Society

**Bob Nielson**, Chair, NCAA Rules Committee

**Scott Oliaro**, Board Member, College Athletics Trainers Society

**Kene Orjioke**, Division I Student-Athlete Advisory Committee (SAAC), University of California, Los Angeles

**Steve Pachman**, JD, Montgomery McCracken

**Sourav Poddar**, MD, American College of Sports Medicine

**Kayla Porter**, Division III Student-Athlete Advisory Committee, Frostburg State University

**Rogers Redding**, Secretary Rules Editor, NCAA Football Rules Committee

**Yvette Rooks**, Board Member, College Athletics Trainers Society

**Eric Rozen**, Board Member, College Athletics Trainers Society

**Scott Sailor**, President, National Athletic Trainers' Association

**Jon Steinbrecher**, Commissioner, Mid-American Conference

**Ken Stephens**, National Operating Committee on Standards for Athletic Equipment

**Edward Stewart**, Senior Associate Commissioner, Big 12 Conference

**Michael Strickland**, Senior Associate Commissioner, Atlantic Coast Conference

**Grant Teaff**, Executive Director, American Football Coaches Association

**Buddy Teevens**, Coach, Dartmouth University

**James Tucker**, MD, Board Member, College Athletics Trainers Society

**Steve Walz**, Associate Director of Athletics, University of South Florida

**Alfred White**, Senior Associate Commissioner, Conference USA

## STAFF PARTICIPANTS

**Brian Burnsed**, Associate Director, Communications

**Dawn Buth**, Associate Director, Sport Science Institute

**Cassie Folck**, Coordinator, Sport Science Institute

**Brian Hainline**, Chief Medical Officer, NCAA

**Kathleen McNeely**, Chief Financial Officer, NCAA

**Terrie Meyer**, Executive Assistant, Sport Science Institute

**John Parsons**, Director, Sport Science Institute

**Chris Radford**, Associate Director, Public & Media Relations

**Stephanie Quigg**, Director, Academic & Membership Affairs

## ENDORISING MEDICAL ORGANIZATIONS

American Association of Neurological Surgeons  
American College of Sports Medicine  
American Medical Society for Sports Medicine  
American Orthopaedic Society for Sports Medicine  
American Osteopathic Academy of Sports Medicine  
College Athletic Trainers' Society  
Collegiate Strength and Conditioning Coaches Association  
Competitive Safeguards and Medical Aspects of Sports  
Congress of Neurological Surgeons  
Korey Stringer Institute  
National Athletic Trainers' Association  
National Operating Committee on Standards for Athletic Equipment  
National Strength and Conditioning Association  
Sports Neuropsychology Society



# NC State University Sports Medicine

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## Head Coaches Checklist

- Sickle Cell
- Concussion
- Heat and Hydration/Acclimatization
- Lightning
- EAP
- Drug Testing
- HIPAA
- Day-to Day (injury reports who, how, how often)
- Team Meeting needs specific to sports

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Head Coach Signature

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Date

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Assistant Coach Signature

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Date

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Assistant Coach Signature

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Date

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Assistant Coach Signature

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Date

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Athletic Trainer Signature

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Date



# NC State University Sports Medicine

## Strength & Conditioning Coaches Checklist

- Sickle Cell
- Concussion
- Heat and Hydration/Acclimatization
- Lightning
- EAP
- Drug Testing
- HIPAA
- Day-to Day (injury reports who, how, how often)
- Provide list of medical conditions for student-athletes working out with them (concussion history, sickle cell, heat, cardiac, diabetes, asthma, allergies)

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Strength Coach Signature

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Date

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Athletic Trainer Signature

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Date



# NC State University Sports Medicine Sickle Cell Trait Notification (Coach)

\_\_\_\_\_ (sport)

The Sports Medicine Staff would like to make you aware that as of \_\_\_\_\_ (date)  
the following student-athletes have been identified as having sickle cell trait:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

**Please understand that seven college student-athletes with sickle cell trait, died during conditioning activities between 2000-2009.**

**This is a high risk group that should be monitored appropriately.**

**Activity should be stopped immediately if any of these athletes experiences muscle pain and/or a cramping sensation, abdominal weakness, abnormal fatigue, or breathlessness.**

**Never restrict water.**

**Contact EMS and/or your Athletic Trainer when any athlete is in distress.**



# NC State University Sports Medicine

## Sickle Cell Trait Notification (Coach)

Athlete's name: \_\_\_\_\_ Team: \_\_\_\_\_

Coach's name: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### Introduction:

Sickle Cell trait is the inheritance of one gene for sickle hemoglobin and one for normal hemoglobin. This trait gives red blood cells a sickle or "half-moon" shape that should normally be round. This trait can make red blood cells stick to vessel walls and also gives them poor oxygen carrying capacity compared to normal red blood cells. During exercise, these sickled red blood cells can accumulate in the bloodstream. The accumulation of sickled red blood cells can lead to ischemic rhabdomyolysis, the rapid breakdown of muscle cells possibly causing death if not treated. Sickling can occur within 2-3 minutes of intense all-out exercise. Heat, dehydration, altitude, asthma, and other medical conditions may increase the risk.

### Characteristics of a Sickling Collapse:

- Sickling collapse has been mistaken for cardiac collapse or heat collapse. But unlike sickling collapse, cardiac collapse tends to be "instantaneous", and the athlete (with Ventricular fibrillation) who hits the ground no longer talks. A sickling collapse often occurs within the first half hour on field, as during wind sprints as opposed to heat collapse which tends to happen after prolonged periods of exercise. (NATA Consensus)
- Sickling does not have muscle twinges as compared to heat cramps;
- Heat cramping pain is more severe than sickling;
- Heat cramps lock up the athlete, sickling players slump to the ground in muscle weakness;
- Heat cramping athletes tend to yell in pain with muscle contractions, while sickling athletes lie fairly still with normal tension in their muscles;
- Sickling athletes can recover quickly if caught early and treated effectively

### Precautions and Treatment:

- Build up in training slowly with paced progressions, allow for longer rest and recovery periods. These athletes should be involved in year round and preseason strength and conditioning to enhance their preparedness.
- Consider excluding athletes with sickle cell trait from participation in performance test such as mile runs or serial sprints.
- Give alternative exercises for performance testing especially if the standards are not specific to the sport
- Stop all activity with onset of symptoms (the sensation of muscle "cramping", pain, swelling, weakness, tenderness; inability to "catch breath", fatigue).
- The athletic trainer will have the ability to pull a sickle cell trait athlete out of activity.
- Allow sickle cell trait athletes to set their pace.
- Athletes with sickle cell trait that perform repetitive high speed sprints and/or interval training that induces high levels of lactic acid should be allowed extended recovery between repetitions if needed.
- Allow athletes to seek evaluation once signs and symptoms arise. These athletes also should not be harassed for sitting out.
- Encourage proper hydration. Never restrict water to any athlete.
- Understand that asthma, heat illness, and altitude can increase the likelihood of sickling.
- Sickle cell trait athletes should not participate in extreme exercise sessions when they are ill or have a fever.
- Educate the student-athlete about the signs and symptoms and encourage them to report these symptoms.
- Coach should contact ATC or EMS if sickling is suspected.

By signing below I am stating that I have been notified of my student-athlete's positive sickle cell trait test by NC State Sports Medicine, that I have received education on sickle cell trait, and that I have also been instructed on the proper precautions and treatment of sickle cell trait.

Coach's Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Athletic Trainer's Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_



# NC State University Sports Medicine

## Sickle Cell Trait Notification (S&C Coach)

Athlete's name: \_\_\_\_\_ Team: \_\_\_\_\_

Coach's name: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### Introduction:

Sickle Cell trait is the inheritance of one gene for sickle hemoglobin and one for normal hemoglobin. This trait gives red blood cells a sickle or "half-moon" shape that should normally be round. This trait can make red blood cells stick to vessel walls and also gives them poor oxygen carrying capacity compared to normal red blood cells. During exercise, these sickled red blood cells can accumulate in the bloodstream. The accumulation of sickled red blood cells can lead to ischemic rhabdomyolysis, the rapid breakdown of muscle cells possibly causing death if not treated. Sickling can occur within 2-3 minutes of intense all-out exercise. Heat, dehydration, altitude, asthma, and other medical conditions may increase the risk.

### Characteristics of a Sickling Collapse:

- Sickling collapse has been mistaken for cardiac collapse or heat collapse. But unlike sickling collapse, cardiac collapse tends to be "instantaneous", and the athlete (with Ventricular fibrillation) who hits the ground no longer talks. A sickling collapse often occurs with-in the first half hour on field, as during wind sprints as opposed to heat collapse which tends to happen after prolonged periods of exercise. (NATA Consensus)
- Sickling does not have muscle twinges as compared to heat cramps;
- Heat cramping pain is more severe than sickling;
- Heat cramps lock up the athlete, sickling players slump to the ground in muscle weakness;
- Heat cramping athletes tend to yell in pain with muscle contractions, while sickling athletes lie fairly still with normal tension in their muscles;
- Sickling athletes can recover quickly if caught early and treated effectively

### Precautions and Treatment:

- Build up in training slowly with paced progressions, allow for longer rest and recovery periods. These athletes should be involved in year round and preseason strength and conditioning to enhance their preparedness.
- Consider excluding athletes with sickle cell trait from participation in performance test such as mile runs or serial sprints.
- Give alternative exercises for performance testing especially if the standards are not specific to the sport
- Stop all activity with onset of symptoms (the sensation of muscle "cramping", pain, swelling, weakness, tenderness; inability to "catch breath", fatigue).
- The athletic trainer will have the ability to pull a sickle cell trait athlete out of activity.
- Allow sickle cell trait athletes to set their pace.
- Athletes with sickle cell trait that perform repetitive high speed sprints and/or interval training that induces high levels of lactic acid should be allowed extended recovery between repetitions if needed.
- Allow athletes to seek evaluation once signs and symptoms arise. These athletes also should not be harassed for sitting out.
- Encourage proper hydration. Never restrict water to any athlete.
- Understand that asthma, heat illness, and altitude can increase the likelihood of sickling.
- Sickle cell trait athletes should not participate in extreme exercise sessions when they are ill or have a fever.
- Educate the student-athlete about the signs and symptoms and encourage them to report these symptoms.
- Coach should contact ATC or EMS if sickling is suspected.

By signing below I acknowledge that I have been notified of my student-athlete's positive sickle cell trait test by NC State Sports Medicine, that I have received education on sickle cell trait, and that I have also been instructed on the proper precautions and treatment of sickle cell trait.

S&C Coach's Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Athletic Trainer's Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_



# NC State University Sports Medicine Sickle Cell Trait Notification (Student-Athlete)

Name: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Team: \_\_\_\_\_

### Introduction:

Sickle Cell trait is the inheritance of one gene for sickle hemoglobin and one for normal hemoglobin. This trait gives red blood cells a sickle or “half- moon” shape that should normally be round. This trait can make red blood cells stick to vessel walls and also gives them poor oxygen carrying capacity compared to normal red blood cells. During exercise, these sickled red blood cells can accumulate in the bloodstream. The accumulation of sickled red blood cells can lead to ischemic rhabdomyolysis, the rapid breakdown of muscle cells possibly causing death if not treated. Sickling can occur within 2-3 minutes of intense all –out exercise. Heat, dehydration, altitude, asthma, and other medical conditions may increase the risk.

### Characteristics of a Sickling Collapse:

- Sickling collapse has been mistaken for cardiac collapse or heat collapse. But unlike sickling collapse, cardiac collapse tends to be “instantaneous”, and the athlete (with Ventricular fibrillation) who hits the ground no longer talks. A sickling collapse often occurs with-in the first half hour on field, as during wind sprints as opposed to heat collapse which tends to happen after prolonged periods of exercise. (NATA Consensus)
- Sickling does not have muscle twinges as compared to heat cramps;
- Heat cramping pain is more severe than sickling;
- Heat cramps lock up the athlete, sickling players slump to the ground in muscle weakness;
- Heat cramping athletes tend to yell in pain with muscle contractions, while sickling athletes lie fairly still with normal tension in their muscles;
- Sickling athletes can recover quickly if caught early and treated effectively

### Precautions and Treatment:

- Athletes should be involved in preseason strength and conditioning to enhance preparedness.
- Alternative exercises may be used in place of initial performance tests such as mile runs or serial sprints.
- Stop all activity with onset of symptoms (the sensation of muscle cramping, pain, swelling, weakness, tenderness, inability to catch breath, fatigue).
- Athletes with sickle cell trait that perform repetitive high speed sprints and/or interval training that induces high levels of lactic acid should talk to their coach in advance to discuss the possibility of needing more recovery time between repetitions.
- Athletes need to stay properly hydrated.
- Asthma, heat illness, and altitude can increase the likelihood of sickling.
- Sickle cell trait athletes should not participate in strenuous sessions when they are ill (vomiting or diarrhea) or have a fever.
- Sickling athletes should recognize their symptoms and report them immediately.
- Athletes with positive test results, family medical history, or other indicators of sickle cell trait should share their test results and relevant medical information with their primary care physicians, family, and sports medicine staff.

By signing below, I acknowledge that I have tested positive for sickle cell trait. NC State University Sports Medicine has provided me with educational materials relating to sickle cell trait and that I have also been instructed on the proper precautions and treatment of sickle cell trait. I also understand the risk of my involvement in athletic activity. NC State University Sports Medicine has answered all of my questions regarding sickle cell trait to my satisfaction. I also agree to inform my personal physician and parent/guardian. I further attest that I will notify a member of the NC State University sports Medicine Team immediately should I begin to exhibit any of the signs or symptoms noted above without fear of repercussion.

Athlete’s Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Physician’s Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Athletic Trainer’s Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_





# 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](http://ncaa.org/concussion).





# NC State University Sports Medicine

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## Heat/Hydration & Lightning

**NC State Weather Policy:** While life-threatening situations are rare in athletics, the occasion for serious heat problems does exist here in Raleigh, North Carolina. To insure athletic safety, the sports medicine staff has established the following guidelines.

### Weather Conditions

During times of hot & humid weather, a member of the sports medicine team will determine air temperature and relative humidity using an electronic or sling psychrometer or weather service. Even when a particular sport has athletic trainer coverage, it is the responsibility of the individual coach to obtain information pertaining to heat/humidity. It is common practice to use a scale of combined heat and humidity and follow appropriate procedures for each zone of risk (see attachment). When in the “ALERT 2-4” zone, special observation & consideration should be given to athletes susceptible to heat problems (i.e. athletes overweight or underweight due to water loss, history of previous heat injury, and athletes who normally reside in cool and dry climate). Cold water should be easily accessible before, during and after each activity. Furthermore, buckets of ice towels can be used for cooling during breaks.

As hot/humid weather approaches the caution or “Alert 3” zone (HI 104-127), 5 – 10 minute water breaks will be given every 10 – 15 minutes for supervised helmeted sports. Practice will be in helmets only. For supervised non-helmeted sports 5 – 10 minutes water breaks will be given every 30 – 35 minutes.

If conditions are in the “Alert 4” zone (HI > 127), there will be no practice. Activity should be limited, when possible, to the coolest part of the day (before 10:00 a.m. or after 4:00 p.m.)

### Weight Monitoring

Requiring athletes to weigh in and out of practice during hot and humid weather is particularly important. Losses of 3-5% body weight after practice indicates dehydration. A return weigh-in before the next practice should be within 1-2% of original weight.

Athletes with a 2% or greater weight loss between practices should be held out of all activity & report to the athletic trainer for instruction on proper hydration. Once evaluation of the student-athlete is performed and instruction of hydration has been provided, the student-athlete will be re-evaluated on their ability to participate.

The Heat Index is the temperature the body feels when heat and humidity are combined. The chart below shows the Heat Index that corresponds to the actual air temperature and relative humidity. This chart is based upon shady, light wind conditions. Exposure to direct sunlight can increase the Heat Index by up to 15 degrees Fahrenheit.

	Relative Humidity (%)													
	40	45	50	55	60	65	70	75	80	85	90	95	100	
110	136	-	-	-	-	-	-	-	-	-	-	-	-	-
108	130	137	-	-	-	-	-	-	-	-	-	-	-	-
106	124	130	137	-	-	-	-	-	-	-	-	-	-	-
104	119	124	131	137	-	-	-	-	-	-	-	-	-	-
102	114	119	124	130	137	-	-	-	-	-	-	-	-	-
100	109	114	118	124	129	136	-	-	-	-	-	-	-	-
98	105	109	113	117	123	128	134	-	-	-	-	-	-	-
96	101	104	108	112	116	121	126	132	-	-	-	-	-	-
94	97	100	102	106	110	114	119	124	129	135	-	-	-	-
92	94	96	99	101	105	108	112	116	121	126	131	-	-	-
90	91	93	95	97	100	103	106	109	113	117	122	127	132	-
88	88	89	91	93	95	98	100	103	106	110	113	117	121	-
86	85	87	88	89	91	93	95	97	100	102	105	108	112	-
84	83	84	85	86	88	89	90	92	94	96	98	100	103	-
82	81	82	83	84	84	85	86	88	89	90	91	93	95	-
80	80	80	81	81	82	82	83	84	84	85	86	86	87	-

With Prolonged Exposure and/or Physical Activity			
Alert 1	Alert 2	Alert 3	Alert 4
Fatigue possible	Sunstroke, muscle cramps, and/or heat exhaustion possible	Sunstroke, muscle cramps, and/or heat exhaustion likely	Heat Stroke or sunstroke likely
Outdoor Helmeted Supervised			
Alert 1	Alert 2	Alert 3	Alert 4
HI<90	HI 90-103	HI 104-127	HI>127
	Normal practice gear <b>REMOVE HELMETS DURING BREAKS</b>  5 minute break every 15-20 minutes	Helmets only no pads <b>REMOVE HELMETS DURING BREAKS</b>  5 minute break every 10-15 minutes	<b>NO PRACTICE OUTSIDE</b>
Indoor Helmeted Non-Conditioned Air with Limited Circulation			
Alert 1	Alert 2	Alert 3	Alert 4
HI<90	HI 90-103	HI 104-127	HI>127
	Normal practice gear <b>REMOVE HELMETS DURING BREAKS</b>  5 minute break every 15-20 minutes	Helmets only no pads <b>REMOVE HELMETS DURING BREAKS</b>  5 minute break every 10-15 minutes	<b>NO PRACTICE</b>
Outdoor Non-Helmeted Supervised			
Alert 1	Alert 2	Alert 3	Alert 4
HI<90	HI 90-103	HI 104-127	HI>127
	5 minute break every 45-50 minutes	5 minute break every 30-35 minutes	<b>NO PRACTICE OUTSIDE</b>
Indoor Non-Helmeted Non-Conditioned Air with Limited Circulation			
Alert 1	Alert 2	Alert 3	Alert 4
HI<90	HI 90-103	HI 104-127	HI>127
	5 minute break every 30-45 minutes	5 minute break every 20-30 minutes	<b>NO PRACTICE</b>

## Lightning Safety Policy (Updated August 2014)

### 2014 ACC Football Policy

*When lightning is detected within 15 miles of the competition site, home team game management shall utilize the PA system to inform those in attendance that inclement weather including lightning is within 15 miles and that should patrons wish to vacate the facility for a safe shelter, they will be allowed to re-enter with a ticket stub.*

*When lightning is detected within eight (8) miles of the competition site, the competition site shall be suspended by the Referee upon notification by host game management personnel. Competition may be resumed when lightning is no longer within the eight (8) mile range. Thirty minutes must elapse from the time of the last lightning strike with the eight (8) mile radius before any players, coaches or game officials shall be permitted back on the field. A ten minute warm-up period will be granted to both teams prior to the resumption of play once it has been determined that it is safe for participants to return to the field. The game manager will communicate to both teams when this transition period commences.*

The primary consideration in this type of situation should be safety. The game should be suspended when there is an imminent threat. The referee should not hesitate to suspend a game after consultation with the proper officials from each institution participating in the game.

### NC State Football Game Day Policy

- 15 miles: Athletics to call weather source and find out more information on the track of the storm. First notification to the fans that weather is within fifteen (15) miles
- 8 miles: competition is suspended and evacuation of the stadium/field
- Thirty minutes must lapse from the time of the last lightning strike within the eight (8) mile radius before anyone, including but not limited to student-athletes, coaches, support staff and grounds crew, shall be permitted back on the field.
- Game Day Operations will assume responsibility for contacting the weather service and suspension of the game as well as resumption of activities

### NC State Olympic Sport Game Day Policy

- 15 miles: Athletics to call weather source and find out more information on the track of the storm. First notification to the fans that weather is within 15 miles
- 8 miles: Competition is suspended and evacuation of the stadium/field
- The weather service must indicate the area is safe before anyone, including but not limited to student-athletes, coaches, support staff and grounds crew, shall be permitted back on the field.
- Game Day Operations will assume responsibility for contacting the weather service and suspension of the game as well as resumption of activities

### NC State Team Practice Policy

- 15 miles: Athletics will notify coaching staff of impending storm
- 8 miles: Competition is suspended and evacuation of the stadium/field
- The weather service must indicate the area is safe before anyone, including but not limited to student-athletes, coaches, support staff and grounds crew, shall be permitted back on the field.
- Sports Medicine will assume responsibility for contacting the weather service and suspension of the game as well as resumption of activities

## Safety Advice

Stay away from the tallest trees or lone objects (such as light posts or flagpoles), metal objects (such as metal fences or metal bleachers), individual trees, standing pools of water, and open fields. Avoid being the highest object in the field, and do not take shelter under a single tall tree. Do not use the telephone except in emergency situations. A cellular phone or cordless telephone is a safe alternative to a land-line phone, if the person and the antenna are located within a safe shelter, and all other precautions are followed. People have been struck by lightning and killed while using a land -line telephone.

Lightning strike victims do not carry an electrical charge. Therefore, first responders can safely touch victims of a lightning strike. It is only those people electrocuted by high voltage lines, and who are still in contact with those lines that continue to carry an electrical charge. Lightning strike victims who show signs of cardiac or respiratory arrest need prompt emergency help. Beginning CPR and other first aid measures can fully revive a victim who initially presents as a cardiac or pulmonary arrest. CPR is safe for the responder and necessary for any hope of survival for many lightning strike victims. Pay much more attention to the lightning threat than the rain. It does not have to be raining for lightning to strike. Lightning can strike far from the rain shaft.

## Safe Shelter

A safe shelter is a building with electricity and/or plumbing or a hard topped vehicle with windows closed. Picnic shelters, dugouts, small buildings without plumbing or electricity are **NOT** safe. A **safe building** is one that is fully enclosed with a roof, walls and floor, and has plumbing or wiring. Examples include a home, school, church, hotel, office building or shopping center. Once inside, stay away from showers, sinks, bath tubs, and electronic equipment such as TVs, radios, corded telephones and computers.

**Unsafe buildings** include car ports, open garages, covered patios, picnic shelters, beach pavilions, golf shelters, tents of any kinds, baseball dugouts, sheds and greenhouses. *Source: National Weather Service Website: <http://www.weather.gov>.*

Tall objects (eg, trees, poles and towers, and elevated areas) are potential lightning targets and should be avoided. Large bodies of water, including swimming pools, are unsafe areas. *Source: National Athletic Trainers' Association Position Statement: Lightning Safety for Athletics and Recreation. Web site: <http://www.nata.org/access-read/public/position-statements>.*

## Indoor pools and spas

When lightning is within eight (8) miles according to the Lightning Tracking Service indoor pools and spas will be vacated. *Source: National Lightning Safety Institute. Web site: [http://www.lightningsafety.com/nlsi\\_pls/indoor\\_pools.html](http://www.lightningsafety.com/nlsi_pls/indoor_pools.html).*

Injuries have been reported to people inside a building who were using plumbing or wiring or were near enough to the structure to receive a side flash from lightning. Close proximity to showers, sinks, locker rooms, indoor pools, appliances, and electronics can be unsafe. *Source: National Athletic Trainers' Association Position Statement: Lightning Safety for Athletics and Recreation. Web site: <http://www.nata.org/access-read/public/position-statements>.*

# Emergency Action Plan

## Dail Soccer Field/Derr Track Complex

Address: 2505 Cates Ave. Raleigh, NC 27606

### Emergency Phone Numbers

EMS	911
Campus Police	(919) 515-3000
Student Health	(919) 515-2563
WB Training Room	(919) 515-2111
Rob Murphy (MSOC)	(478) 951-7115
Tracy Yoshikawa (WSOC)	(269) 501 9490
Blake Wickerham (Track)	(616) 255-3336
Devyn Wilson (Track)	(567) 208-9807
<b>*Dial 7+1+Area code from a campus line</b>	

### EMERGENCY PERSONNEL

- A Certified Athletic Trainer (ATC) is present for most events and practices and will be the primary contact during an emergency situation. In the event an ATC is not present, the administrator in charge should designate a first responder who will be responsible for activating the emergency action plan.

#### A. EMERGENCY NUMBER

- If a life-threatening condition occurs, including but not limited to concussion, heat illness, spine injury, cardiac arrest, respiratory distress (e.g. asthma), and sickle cell trait collapses call **911**.
- If a non-life-threatening condition occurs call
  - Weisiger-Brown Athletic Training Room **(919) 515-2111**
  - Student Health Services **(919) 515-2563** or **5-2563** (campus line)
  - Rex Emergency Room **(919) 784-3038** (dial 7 for an outside line)

#### B. ROLE OF FIRST RESPONDER

1. Immediate care of injured or ill person
  2. **Activate Emergency Medical Service (EMS)**  
**Call 911**
    - Give your name
    - Location/Address (see below)
    - # calling from
    - State the emergency
    - Approx. age of victim
    - Conscious: Y/N?
    - Breathing: Y/N?
    - Pulse: Y/N?
    - Severe bleeding Y/N?
- Limit scene to first-aid providers and remove all bystanders
  - Designate a person to meet the ambulance at the service road entrance on Cates Ave.

#### C. DIRECTIONS TO DAIL SOCCER FIELD/DERR TRACK COMPLEX

- 2505 Cates Avenue; NCSU Facilities ID# 115J
- Directions:
  - From Western BLVD turn onto Morrill Dr.
  - Continue to stop light and turn right onto Cates Ave.
  - Drive past the soccer field on the right and a designee will meet the ambulance at the service road entrance.

#### D. EMERGENCY EQUIPMENT

- During NC State sanctioned events the following emergency equipment will be located at the Dail Soccer Field/Track Complex or in the Weisiger-Brown Athletic Training Room:
  - AED
  - Splints
  - Crutches
  - First-Aid Supplies
  - Oxygen

# Emergency Action Plan

## Wolfpack Training Complex – Grass

431 Dan Allen Dr. (Pulp & Paper Laboratories)

### Emergency Phone Numbers

EMS	911
Campus Police	(919) 515-3000
Student Health	(919) 515-2563
Weisiger-Brown Athletic Training Room	(919) 515-2111
Rob Murphy	(478) 951-7115
Blake Wickerham (MSOC)	(616) 255-3336
Tracy Yoshikawa (WSOC)	(269) 501 6460
<b>*Dial 7+1+Area code from a campus line</b>	

### **A. EMERGENCY PERSONNEL**

- Certified/Licensed Athletic Training staff and/or graduate assistant Athletic Trainers may be on site for all NCSU team official events and NCSU team official practices.
- Certified/Licensed Athletic Training staff and/or graduate assistant Athletic Trainers may be on-call in the Weisiger-Brown Athletic Training Room **(919) 515-2111**, or basement level-Reynolds Athletic Training Room at **(919) 513-7801** during NCSU team practices.
- EMS staff will be on-site or on-call for all official NCSU sports' scheduled competitive events.
- In the event that an Athletic Trainer is not present, the administrator in charge should designate a first responder who will be responsible for activating the emergency action plan.

### **B. EMERGENCY NUMBERS (\*dial 7 for an outside line, if using a land-line phone).**

- If a life-threatening condition occurs, including but not limited to concussion, heat illness, spine injury, cardiac arrest, respiratory distress (e.g. asthma), and sickle cell trait collapses, call **911 and Public Safety/Campus Police (919) 515-3000 or 5-3000** (campus line).
- If a non-life-threatening condition occurs call:
  - Weisiger-Brown Athletic Training Room **(919) 515-2111 or 5-2111** (campus line)
  - Reynolds Athletic Training Room **(919) 513-7801 or 3-7801** (campus line)
  - Student Health Services **(919) 515-2563 or 5-2563** (campus line)
  - Rex Emergency Room **(919) 784-3038**

### **C. ROLE OF FIRST RESPONDER**

1. Provide immediate care of injured or ill person
2. **Activate Emergency Medical Service (EMS)**  
**Call 911, and Public Safety/Campus Police (919) 515-3000 or 5-3000** (campus line):
  - Give your name
  - Location/Address (see below-section D)
  - # calling from
  - State the emergency
  - Approx. age of victim
  - Conscious: Y/N?
  - Breathing: Y/N?
  - Pulse: Y/N?
  - Severe bleeding Y/N?
  - Any other pertinent information
3. Designate a person to meet the ambulance at the entrance to the Pulp & Paper Laboratories building, on Dan Allen Dr., to direct toward the grass field entrance.
  - Limit scene to first aid providers and remove all bystanders

### **D. DIRECTIONS TO Wolfpack Training Complex – Grass Field**

431 Dan Allen Dr (Pulp & Paper Laboratories)

- From Western Blvd head northeast on Dan Allen Dr
- A designee will meet EMS at the entrance to the Pulp & Paper Laboratories building, on Dan Allen Dr., to direct toward the grass field entrance.



# Emergency Action Plan

## Wolfpack Training Complex - Turf

400 Morrill Dr Raleigh, NC

### Emergency Phone Numbers

EMS	911
Campus Police	(919) 515-3000
Student Health	(919) 515-2563
Weisiger-Brown Athletic Training Room	(919) 515-2111
Rob Murphy	(478) 951-7115
Blake Wickerham (MSOC)	(616) 255-3336
Tracy Yoshikawa (WSOC)	(269) 501 6460
<b>*Dial 7+1+Area code from a campus line</b>	

### **A. EMERGENCY PERSONNEL**

- Certified/Licensed Athletic Training staff and/or graduate assistant Athletic Trainers may be on site for all NCSU team official events and NCSU team official practices.
- Certified/Licensed Athletic Training staff and/or graduate assistant Athletic Trainers may be on-call in the Weisiger-Brown Athletic Training Room **(919) 515-2111**, or basement level-Reynolds Athletic Training Room at **(919) 513-7801** during NCSU team practices.
- EMS staff will be on-site or on-call for all official NCSU sports' scheduled competitive events.
- In the event that an Athletic Trainer is not present, the administrator in charge should designate a first responder who will be responsible for activating the emergency action plan.

### **B. EMERGENCY NUMBERS (\*dial 7 for an outside line, if using a land-line phone).**

- If a life-threatening condition occurs, including but not limited to concussion, heat illness, spine injury, cardiac arrest, respiratory distress (e.g. asthma), and sickle cell trait collapses, call **911 and Public Safety/Campus Police (919) 515-3000 or 5-3000** (campus line).
- If a non-life-threatening condition occurs call:
  - Weisiger-Brown Athletic Training Room **(919) 515-2111 or 5-2111** (campus line)
  - Reynolds Athletic Training Room **(919) 513-7801 or 3-7801** (campus line)
  - Student Health Services **(919) 515-2563 or 5-2563** (campus line)
  - Rex Emergency Room **(919) 784-3038**

### **C. ROLE OF FIRST RESPONDER**

1. Provide immediate care of injured or ill person
2. **Activate Emergency Medical Service (EMS)**  
**Call 911, and Public Safety/Campus Police (919) 515-3000 or 5-3000** (campus line):
  - Give your name
  - Location/Address (see below-section D)
  - # calling from
  - State the emergency
  - Approx. age of victim
  - Conscious: Y/N?
  - Breathing: Y/N?
  - Pulse: Y/N?
  - Severe bleeding Y/N?
  - Any other pertinent information
3. Designate a person to meet the ambulance at WTC entrance on Morrill Drive to direct toward the turf field entrance.
  - Limit scene to first aid providers and remove all bystanders

### **D. DIRECTIONS TO WOLFPACK TRAINING COMPLEX**

- 400 Morrill Dr Raleigh, NC
- From Western Blvd turn onto Morrill Drive.
  - Wolfpack Training Complex will be on the Left.
  - A designee will meet you at the entrance to the Wolfpack Training Complex.

# EXECUTIVE SUMMARY

## NC State Athletics Drug Education, Screening, Counseling and Deterrence Program

Effective Date: October 1, 2018

*Changing Habits And Mindset Program - Best Practices for the Education and Treatment of Substance Use*

### I. The program can be divided into 3 categories of drugs and sanctions, as follows:

	1 Performance Enhancing Drugs / Anabolic	2 Recreational Drugs (other than marijuana)	3 Marijuana (THC)
Onboarding Assessment →	N/A	Warning / Counseling / Education	Warning / Counseling / Education
1st Offense →	50% Season Suspension/ Counseling	Warning / Counseling / Education	Warning / Counseling / Education
2nd Offense →	Dismissal	20% Game Suspension / Counseling	10% Game Suspension / Counseling
3rd Offense →		Indefinite Suspension	20% Game Suspension / Counseling
4th Offense →			Indefinite Suspension

### II. Key Points For All Drug Testing:

- (1.) Unannounced/random testing.
- (2.) Following 1st positive offense, a 90 day evaluation/counseling period is implemented.
- (3.) Following all subsequent positive tests, a 30 day evaluation/counseling period is implemented.
- (4.) During Evaluation/Counseling Period, the SA will be tested frequently. Positive test results will NOT count as an additional offense during this time.
- (5.) After the Evaluation/Counseling Period, all positive tests will be considered an additional offense.
- (6.) Any tampering, manipulation or avoidance of testing shall be considered a Performance Enhancing Drug/Anabolic offense (see the table above).
- (7.) Self-Report. One time during SA career, prior to being notified of a drug test, the SA can self-report without incurring an offense. A Counseling/Evaluation Period will follow. (Note: NCAA testing does not acknowledge NC State's Self-Report process; e.g. if a SA tests positive with the NCAA during this period, the SA will be subject to applicable NCAA drug testing sanctions.)
- (8.) Violation Reduction. One time during SA career, the SA offense status may be reduced by one following 12 consecutive months without a positive test (e.g. a SA with two offenses would be reduced to one offense). The SA must request to utilize their violation reduction.
- (9.) Written and distributed Team Rules can provide for stricter sanctions at discretion of head coach.



Authority	<b>Chancellor</b>
Title	<b>Drug Education, Screening, Counseling, and Deterrence Program</b>
Classification	<b>REG 09.00.04</b>
PRR Subject	<b>Intercollegiate Athletics</b>
Contact Info	<b>Assistant Athletics Director for Sports Medicine (919-513-4442)</b>

**History:** First Issued: July 1, 2013. Updated October 27, 2015. Updated August 28, 2018.

**Related Policies:**

**POL 09.00.02--Drug Education, Screening, Counseling, and Deterrence Policy**

**UNC Policy 1100.1 - Intercollegiate Athletics**

**UNC Code: Appendix XIII - Intercollegiate Athletics**

**Additional References:**

Drug Education, Screening, Counseling, and Deterrence Program Form

**Appendix A - Drug Testing Protocol**

Appendix B – Drug Testing Threshold

**1. INTRODUCTION**

This regulation sets forth NC State’s program and procedures regarding the drug education, screening, counseling, and deterrence for the members of the university’s intercollegiate athletic teams, including both scholarship and walk-on student-athletes (“Program”).

**2. DEFINITIONS**

2.1 The terms “contests”, “games”, “matches”, “competitions”, “events”, and “meets” should be considered synonymous unless otherwise noted within this regulation.

2.2 “Chain of Custody” means the process demonstrating control, transfer, analysis and disposition of the specimen.

2.3 “Cross-Reactivity” means a phenomenon where the drug test indicates a positive result due to the presence of a substance other than the one being tested for.

2.4 “Dismissal” means the student-athlete is terminated from the team, all team activities, and all intercollegiate athletic activities permanently, including loss of academic support services, sports medicine, and the Office of Scholarships and Financial Aid will be advised that the student’s athletically related financial aid is recommended for cancelation or not renewed.

2.5 “Fatal Flaws” means a procedural error in the drug testing and analysis which calls into question whether the correct specimen was tested or whether the test result was accurate.

2.6 The terms “illegal drugs”, “prohibited substances”, “prohibited drugs”, “street drugs”, “recreational drugs”, and “controlled substances” should be considered synonymous unless otherwise noted within this regulation. These terms mean those drugs or substances categorized in the NCAA-Banned-Drug Classes list, which is updated and revised periodically. A copy of this list can be found online at [www.ncaa.org](http://www.ncaa.org). NC State reserves the right to modify the NCAA banned list at any time. Specific drugs and or drug classes are noted within Appendix A.

2.7 “Intercollegiate athletic activity” means any activity within the Athletics Department, including but not limited to practice, weight-lifting, conditioning, competition, receipt of team benefits, participating in other social functions within the Athletics Department, and serving as a student assistant, manager, athletic trainer, administrative assistant, etc.

2.8 “Suspension” means being sanctioned or withheld from one or more athletic competitions. The student-athlete may not participate in, or dress for a game, receive per diem, or engage in pre or post game activities that pertain to the competition. The student-athlete may not travel to an away game unless the suspension period concludes within an away series. The student-athlete may continue to use athletic facilities during the time of the suspension, such as the weight-room, academic support services and sports medicine to ensure continuity of care. The student-athlete is also permitted to practice and participate in intra-squad scrimmages as well as non-championship season games unless otherwise prohibited. Additionally, a student-athlete who is suspended may not participate in an event(s) as an “unattached” entrant during the NCAA Championship season. Suspension for a percentage of the competitive season will be calculated by adding the total number of games (including pre-season games) listed on the schedule for the NCAA Championship season plus one (1) game for post season play multiplied by the percentage of suspension due. If the suspension percentage equates with a decimal, the value will be rounded down to the nearest whole game regardless of the decimal value. The student-athlete should be withheld from all scheduled pre-season, regular season, and post-season games, including into the following season if necessary, until the suspension period is completed.

2.9 “Valid sample” means a specimen produced that meets the specified criteria for temperature, volume, and on-site specific gravity as delineated by the NCAA Drug Testing Program Manual’s specimen collection procedures or as specified for the type of sample collected.

2.10 The terms Vice Chancellor and Dean for Academic and Student Affairs, Director of Athletics, Sport Supervisor, and Director of Sports Medicine include their designees or appointees.

### 3. PROGRAM COMPONENTS AND REQUIREMENTS

#### 3.1 Education

Each member of every intercollegiate athletic team at NC State may be required to participate in specific drug education activities provided by the Athletics Department and supervised by the head coaches. Failure to attend required education activities could result in the corrective measures listed in section 4.2.

#### 3.2 Testing

3.2.1 Drug screening tests. To participate in intercollegiate athletics, student-athletes are required to submit to drug screening tests designed to reveal the use of prohibited substances. The test will be a urinalysis or other appropriate drug screening exam and the test may occur on one or more of the occasions listed below. The collection of the test sample may be observed or unobserved.

#### 3.2.2 Prescription Drugs, Over the Counter Medications, and Supplements

3.2.2.1 Student-athletes who are taking drugs pursuant to a prescription are required to notify Sports Medicine. All prescription medications must include a written statement from the attending physician indicating why the athlete is taking the medication and a statement of medical necessity. If the drug is listed on the NCAA's Banned Substance list, alternative medications must be considered. Student-athletes must provide this information at the beginning of each school year and update the information as new prescriptions are received.

3.2.2.2 It is possible to test positive for banned substances that have been prescribed for medical conditions. Testing positive without a prescription will be considered a violation and the student-athlete will be subject to the appropriate corrective measures. Test results will be cross-referenced with known prescriptions to rule out legitimate prescriptions.

3.2.2.3 It is also possible to test positive for banned substances contained in over-the-counter medications or supplements. Student-athletes should consult with his/her Athletic Trainer prior to taking any over-the-counter medications or supplements. Student-athletes may also consult with the Drug Free Sports Axis resource online at <https://dfsaxis.com/users/login> by using login name: NCAA Division I, and password: ncaal.

3.2.2.4 Supplements are not regulated by the FDA and are highly subject to cross-contamination during production. Ultimately the student-athlete will be held accountable for any banned substance and /or metabolite identified during testing. The use of supplements is at the student-athlete's own risk.

### 3.3 Testing Occasions

#### 3.3.1 Assessment Testing

New NC State student-athletes (freshman, transfer students, or try-outs) may be subject to testing during or near the time of their pre-participation physical examination. This testing is considered an assessment period and will be used to identify at-risk individuals. The testing will occur according to the testing protocol set forth in Appendix A.

#### 3.3.2 Random Testing

Every student-athlete is subject to random testing at any time, including pre-season, in-season, post-season and during the summer. The testing occasion may be announced or unannounced and student-athletes to be tested will be selected by a computer generated randomized list. The testing will occur according to the testing protocol set forth in Appendix A.

#### 3.3.3 Reasonable Suspicion Testing

3.3.3.1 A student-athlete may be subject to testing at any time when, in the judgment of the Director of Athletics, sport administrator, sports medicine staff or team physician, there is a reasonable basis to suspect the student-athlete is engaged in the use of prohibited drugs or substances as defined by this regulation. This reasonable suspicion may be based on information from any source, deemed reliable by these athletic officials, including, but not limited to:

- (a) Observed possession or use of drugs/substances that reasonably appear to be those prohibited by the Drug Education, Screening, Counseling, and Deterrence Policy, POL 09.00.02 (“Policy”) and this Program;
- (b) Conviction of a criminal offense related to the possession, use or trafficking in drugs for substances prohibited by the Policy and this Program, arrest for such an offense where there is a factual basis for the arrest, or any acceptance or plea of responsibility for a drug offense, including a prayer for judgment;
- (c) Observed abnormal appearance, conduct or behavior concerns, including those that are disruptive to team dynamics and/or culture, and reasonably interpretable as being caused by the use of drugs/substances prohibited by the Policy and this Program;
- (d) Credible reports of usage or possession of drugs or substances prohibited by the Policy and this Program.

Testing will follow the testing protocol set forth in Appendix A.

3.3.3.2 When a student-athlete has tested positive for drugs or substances prohibited by the Policy and this Program, the student-athlete may be tested again at any time. The Director of Sports Medicine will notify the student-athlete of the testing.

### 3.4 Compliance

3.4.1 To participate on an NC State's intercollegiate athletic team, all student-athletes must comply and agree to abide by the terms and requirements of this Program.

3.4.2 The student-athlete shall receive, read, and consent to the Policy and this Program prior to participation in athletic activities. This consent will be signified by the student-athlete's signature affixed to a consent form. A student-athlete who fails to sign the statement will not be permitted to participate on NC State's intercollegiate athletic team.

3.4.3 The form shall be dated and signed by the student-athlete, and by the student-athlete's parent or guardian if the student-athlete is a minor under North Carolina law.

## **4. CORRECTIVE MEASURES FOR VIOLATION OF THE POLICY AND/OR PROGRAM**

### 4.1 Failure to Participate in or Cooperate with Testing

4.1.1 A student-athlete who fails to appear for testing without good cause shown, or who attempts to circumvent the specimen collection and testing process will be considered positive for an anabolic agent and will be subject to the corrective measures set forth in section 4.3. A student-athlete who fails to appear for testing and provides good cause to the Director of Athletics may be tested as soon as practical, at the discretion of the Director of Sports Medicine.

4.1.2 Failure to produce a valid specimen will be treated as a positive test for an anabolic agent and will be subject to the corrective measures set forth in section 4.3. Production of a tampered sample will be considered a failure to produce a valid specimen, which will likewise be treated as a positive test under this section.

### 4.2 Failure to Attend Drug Education Activity

A student-athlete who fails to attend the provided drug education seminar will be allowed to perform a makeup activity. Failure to satisfactorily complete the required programming by the instructed deadline will result in a mandatory meeting with the head coach of the sport and sport supervisor.

### 4.3 Impermissible Use of Any Prohibited Substances

The minimum corrective measures specified in this section shall apply following (a) any positive result on a drug test administered pursuant to this Program, (b) any positive result on an NCAA administered drug test and for which the NCAA has its own consequences in addition to NC State's, or (c) the occurrence of an event that is considered the equivalent of a positive test under section 4.1 of this regulation. All violations are cumulative during the student-athlete's time at the university for disciplinary purposes.

#### 4.3.1 Notification of a Positive Test, Counseling, Treatment, and Additional Testing

4.3.1.1 *Notification to Athletics Staff.* The Director of Sports Medicine will notify the head coach of the sport in which the student-athlete participates, as well as the Director of Athletics and the respective sport supervisor, when a positive test result occurs.

4.3.1.2 *Notification to Student-Athlete.* The student-athlete may be notified verbally by either the head coach of the sport, the respective sport supervisor, or the Director of Sports Medicine. The student-athlete's parents or guardians will then be advised of the positive test result and corrective measures for the student-athlete.

4.3.1.3 *Meeting with Director of Sports Medicine.* The student-athlete will be required to meet with the Director of Sports Medicine within twenty-four (24) hours of receiving notification of the test results. Exemptions to this time requirement may be granted by the Director of Sports Medicine for good cause shown. During this meeting, the Director of Sports Medicine will provide the student-athlete with written notification of the positive test and the corrective measures to be imposed as a result of the positive test. Additionally, the student-athlete will be informed of their right to a hearing to challenge the findings.

4.3.1.4 *Evaluation Period.*

(a) *Initial Violation.* Upon an initial positive test, the student athlete will be placed on a ninety (90) day evaluation period which period will start the date the student-athlete meets with the Director of Sports Medicine. During an evaluation period the student-athlete will be tested regularly to monitor use and compliance with the Program. Test results during the evaluation period may be shared with the counseling team, Sport Supervisor, head coach of the sport in which the student-athlete participates, and others as deemed appropriate by the Director of Sports Medicine. Positive test results during this period will not be considered violations of this Program, but may be considered by head coaches as violations of team rules. If a different banned substance is detected during the evaluation period it will be considered an additional violation with corresponding corrective measures.

(b) *Additional Violations.* After the Evaluation Period, further corrective measures will follow based on whether a subsequent positive test is the student-athlete's first, second, or third violation. Any subsequent positive tests (after an initial violation of the Policy and/or Program) will initiate another thirty (30) day evaluation period.

(c) *NCAA Testing.* NCAA testing does not acknowledge NC State's Evaluation Period. If the student-athlete tests positive with the NCAA during this period, the student-athlete will be subject to the sanctions imposed by the NCAA.

4.3.1.5 *Probation.* The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be required to undergo reasonable suspicion testing as provided in section 3.3.3 above..

4.1.3.6 *Additional Actions.* The student-athlete will undergo an evaluation by a licensed clinical addiction specialist designated by the Director of Sports Medicine and be required to attend counseling sessions, education programs and/or rehabilitation activities as specified by the



licensed clinical addiction specialist. The student-athlete must meet with the specialist within ten (10) business days of notification. Exceptions may be granted by the Director of Sports Medicine. Failure to meet within the specified guideline will result in a mandatory meeting with the head coach of the sport and sport supervisor. Further non-compliance, including missed appointments with designated medical professionals, may result in additional corrective measures.

#### 4.3.2 Positive Tests for THC/Marijuana

In addition to the consequences specified in section 4.3.1, the following minimum corrective measures will apply following a positive test result for THC/Marijuana:

4.3.2.1 *Second Positive Test:* The student-athlete will be suspended immediately from competition for 10% of the NCAA Championship season pursuant to the provisions of Section 2.8.

4.3.2.2 *Third Positive Test:* The student-athlete will be suspended immediately from competition for 20% of the NCAA Championship season pursuant to the provisions of Section 2.8.

4.3.2.3 *Fourth Positive Test:* The student-athlete will be suspended indefinitely from the athletic team and all intercollegiate activities. The Athletics Department may make a recommendation to the Office of Scholarships and Financial Aid that the student's athletic aid should not be renewed.

4.3.2.4 *Violation Reduction:* If a student-athlete does not test positive for a period of twelve (12) months from the date of his/her last positive test (including tests within the Evaluation Period) and complies with all correctional measures imposed, the student-athlete may have the number of violations for a positive test reduced (e.g. from 1 to 0, from 2 to 1, or from 3 to 2). This process may only be used once during the student-athlete's time at NC State regardless of the banned substance.

#### 4.3.3 Positive Tests for Other Banned Substances That are Not an Anabolic Agent

In addition to the consequences specified in section 4.3.1, the following minimum corrective measures will apply following a positive test result for a substance that is not an anabolic agent or THC/Marijuana:

4.3.3.1 *Second Positive Test:* The student-athlete will be suspended immediately from competition for 20% of the NCAA Championship season pursuant to the provisions of Section 2.8.

4.3.3.2 *Third Positive Test:* The student-athlete will be suspended indefinitely from the athletic team and all intercollegiate activities. The Athletics Department may make a recommendation to the Office of Scholarships and Financial Aid that the student's athletic aid should not be renewed.

4.3.3.3 *Violation Reduction*: If a student-athlete does not test positive for a period of twelve (12) months from the date of his/her last positive test (including tests within the Evaluation Period) , and complies with all correctional measures imposed, the student-athlete may have the number of violations for a positive test reduced (e.g. from 1 to 0, from 2 to 1, or from 3 to 2). This process may only be used once during the student-athlete's time at NC State regardless of the banned substance.

#### 4.3.4 Positive Tests for a Banned Substance That is an Anabolic Agent

In addition to the consequences specified in section 4.3.1, the following minimum corrective measures will apply following a positive test result for a substance that is an anabolic agent:

4.3.4.1 *First Positive Test*: The student-athlete will be suspended for 50% of the NCAA Championship season pursuant to the provisions of Section 2.8.

4.3.4.2 *Second Positive Test*: The student-athlete will be permanently dismissed from the athletic team and all intercollegiate activities. The Athletics Department will make a recommendation to the Office of Scholarships and Financial Aid that the student's athletic aid should not be renewed.

#### 4.3.5 Positive Tests During Assessment Testing

A positive test result during the assessment testing will not be considered a violation of the Policy and therefore will not serve as a first offense under this Program. The student-athlete will be subject to the corrective measures provided in section 6, but this positive test shall not constitute utilization of the one-time self-report exemption provided under section 6.3. The head coach of each sport retains discretion to enforce any team penalties up to and including removal of the individual from the team. Any subsequent positive tests will follow the corrective measures outlined in this section.

#### 4.4 Failure to Comply with Corrective Measures Imposed

Failure to comply with any of the corrective measures imposed as a result of violation of the Policy and/or Program may result in the imposition of additional corrective measures.

### **5. CHALLENGE HEARINGS**

Any student-athlete who is charged with violating the Policy has the right to a hearing.

#### 5.1 Written Notice

The student-athlete will be given written notice by the Director of Sports Medicine of the intention to impose one or more corrective measures, the reasons for the proposed action, and the right of the student-athlete to request a hearing. Any corrective measures imposed shall become effective immediately following the meeting with the Director of Sports Medicine, unless the student-athlete provides a written request for a hearing pursuant to section 5.3.

## 5.2 Exception to the Notice Requirement:

If the proposed corrective measures are based on a preliminary determination of improper drug use that may threaten the health of the athlete other student-athletes or other members of the university community, all athletic participation, training, practice, and competition shall be stopped immediately, pending a medical determination as to whether the athlete is fit and able to resume safe participation in athletic activities. This medical determination, designed to protect the health of the student-athlete, other student-athletes, or other members of the athletic community shall be made as promptly as possible by designated medical professionals. Any information supplied by the student-athlete to medical personnel incident to making such a determination shall not be admissible in any university disciplinary process.

## 5.3 Request for Hearing to Challenge Results

5.3.1 To obtain a hearing the student-athlete must submit a written request to the Director of Athletics within five (5) university business days after receiving the written notice. The basis of the challenge must be expressed in the written request. The request for a hearing must be based on one or more of the applicable grounds as provided in section 5.3.3. The Director of Athletics, or their designee, will determine whether the matter can be reviewed and notify the student-athlete of the impending hearing date. By requesting a hearing, the student-athlete agrees to forgo the confidentiality of the test results.

5.3.2 Corrective measures will be imposed until the written request for a hearing is received and a hearing is granted. Once the hearing is granted, the corrective measures will be temporarily lifted until the appeal has been concluded.

### 5.3.3 What Can Be Heard

- (a). A challenge based on Cross-Reactivity;
- (b). A challenge based upon the Chain of Custody/Drug Testing Procedures; and/or
- (c). A challenge based on Fatal Flaws

## 5.4 The Hearing Panel

The Faculty Athletics Representative (FAR) will appoint a three (3)–member panel to hear the matter. The panel should be comprised of the FAR, whom will serve as chair, the team physician, the Medical Director of Student Health Services, a psychiatrist from either the university counseling center or Sports Medicine, or any member of the Council on Athletics. If the FAR is unable or unwilling to serve as chair, the team physician will serve as chair.

## 5.5 Hearing Procedure

5.5.1. The hearing shall be convened within ten (10) university business days from the date of the student-athlete’s written request. Exceptions to the hearing date may be permitted for good cause shown. The hearing is closed to the public.

5.5.2 The purpose of the hearing is to provide the parties with the opportunity to present their respective cases to the panel. The Chair is responsible for determining whether the hearing should be conducted by telephone conference call or in-person.

5.5.3 Formal rules of evidence do not apply at the hearing, and the panel may consider any information presented by the parties that it believes to be relevant and reliable.

5.5.4 Except in the course of the hearing, panel members should not have any communication with the parties, directly or indirectly, concerning the merits of the case or with each other until the actual hearing.

5.5.5 The student-athlete may be accompanied by an adviser, who must be a student, staff, faculty member, or parent/legal guardian who is not an attorney. Full responsibility for understanding these procedures and presenting the case remain with the student-athlete, even when an advisor provides assistance. In addition to an adviser, the student-athlete may bring an observer to the hearing. An observer may be a parent, friend, or other person of the student-athlete's choice. Observers and advisors may confer with the student-athlete during the hearing, so long as the observer and advisor do not address the Chair or Panel members. However, observers and advisors may not provide representation at the hearing, otherwise actively participate in the hearing, or disrupt or delay it.

5.5.6 Panel members and all other persons involved in the proceeding are expected to maintain confidentiality regarding the proceeding. State and federal laws govern the privacy rights of students and employees. Questions about the disclosure of information should be directed to the Office of General Counsel.

5.5.7 Each party may make an opening and closing statement. After the opening statement, the Director of Athletics, Sport Supervisor, Coach, Director of Sports Medicine, or team physician (if not on the panel) shall present evidence in support of the alleged violation of this policy. At the close of this presentation, the student-athlete may present any statements and any other relevant information to refute this evidence. Panel members may ask questions or request additional information at any time during the hearing. Closing statements, if desired by either party, will conclude the hearing process.

5.5.8 The panel shall deliberate and reach a decision on the challenge in a closed session. The decision must be based solely on the information presented at the hearing. The panel shall review the arguments and documentation submitted and determine whether the Director of Athletics, Sport Supervisor, Coach, Director of Sports Medicine or team physician have shown that more likely than not, the student-athlete is responsible for violating the Policy.

5.5.9 Within three (3) university business days after the conclusion of the hearing, the panel shall report its conclusions concerning the facts and recommendations for any corrective measures to the Vice Chancellor and Dean for Academic and Student Affairs. The Vice Chancellor and Dean for Academic and Student Affairs shall review the panel's conclusions and recommendations and issue a written decision including the corrective measures, if any, to be imposed consistent with the provisions of this Program. If the Vice Chancellor and Dean for

Academic and Student Affairs finds there was insufficient evidence, then the drug test giving rise to the violation will not be considered a positive test for purposes of this Program.

5.6 Imposition of any corrective measures may not occur until the appeal has been concluded. The decision of the Vice Chancellor and Dean for Academic and Student Affairs shall be final, and no further appeal of the decision is permitted.

5.7 Temporary suspension from competition pending a final decision.

During the hearing period and before the panel issues a decision, the student-athlete will be permitted to participate in all intercollegiate competition unless the Director of Athletics imposes a temporary suspension from competition. Temporary suspension may be imposed after the Director of Athletics (1) meets with the student-athlete, (2) explains what the alleged violation is and what evidence exists, (3) allows the student-athlete to explain, deny, or rebut, and (4) the Director of Athletics determines the evidence is strong enough to warrant a hearing and a suspension until a decision on the hearing. The temporary suspension may remain in place, in the Director of Athletics' discretion, until there is a final decision based on the hearing.

## **6. SELF REPORTING A DRUG PROBLEM**

### **6.1 Corrective Measures**

A student-athlete who self-reports a drug problem will follow the remedial guidelines as set forth below:

6.1.1 The Director of Sports Medicine and/or authorized physician will meet with the student-athlete and arrange counseling and evaluation sessions.

6.1.2 The student-athlete will be encouraged to notify his/her parents or guardian.

6.1.3 The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be required to undergo reasonable suspicion testing as provided in section 3.3.3 above.

6.1.4 The student-athlete must attend counseling and evaluation sessions.

6.1.5 The student-athlete will be allowed to practice and compete once the supervising physician determines that the student-athlete is not at any additional risk.

6.1.6 The student-athlete will be placed on either a ninety (90) or thirty (30) day Evaluation Period as provided in section 4.3.1.4. The student-athlete will not be considered positive for subsequent tests conducted by NC State during this Evaluation Period unless a new banned substance is discovered. NCAA testing does not acknowledge NC State's Self-Reporting process. If the student-athlete tests positive with the NCAA during this period, the student-athlete will be subject to the sanctions imposed by the NCAA.

6.1.7 After the Evaluation Period, further corrective measures will follow based on whether a subsequent positive test is the student-athlete's first, second, or third violation.

6.2 Self-reporting will be accepted at any time prior to testing notification or up until midnight before the given day of testing, whichever occurs first. Self-reporting will not be accepted after a student receives notification of the impending test or on the test day. A student-athlete who self-reports a violation after notification or during the impending drug test will be subject to corrective measures.

6.3 The corrective measures for self-reporting may only be utilized once during a student-athlete's tenure at NC State. All subsequent self-reports will follow the corrective measures outlined in section 4.3

## **7. REINSTATEMENT**

7.1 A student-athlete who has been dismissed from intercollegiate athletic activity for violating the Policy may petition for reinstatement on the team within six (6) months of meeting all conditions specified in the written notification of dismissal. The student-athlete must petition the Director of Athletics, the Director of Sports Medicine and the head coach of the respective sport in writing explaining the student-athlete's disposition and the justification for reinstatement.

7.2 Reinstatement may be granted by the Director of Athletics upon formal written request from the student-athlete's head coach and verification of compliance from the Director of Sports Medicine.

7.3 Reinstatement will not be granted for any student-athlete who has been dismissed based upon a second positive drug test for a substance that is identified as an anabolic agent on the NCAA list of banned drugs.

## **Corrective Measures for Assessment Testing**

1. The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be tested as often as deemed necessary.
2. The student-athlete will be placed on a ninety (90) day evaluation period.
3. The student-athlete must attend counseling, evaluation, and educational sessions.
4. The student-athlete will contact and notify his/her parents/legal guardian of the violation.

## **Corrective Measures for Self Reporting**

1. The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be tested as often as deemed necessary.
2. The student-athlete must attend counseling, evaluation, and educational sessions.
3. The student-athlete will be placed on either a ninety (90) or thirty (30) day evaluation period.
4. The student-athlete will be encouraged to contact and notify his/her parents/legal guardian of the self-report.

## **Corrective Measures for THC/Marijuana Violations**

### **First Offense \***

1. The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be tested as often as deemed necessary.
2. The student-athlete will be placed on either a ninety (90) or thirty (30) day evaluation period.
3. The student-athlete must attend counseling, evaluation, and educational sessions.
4. The student-athlete's parents/legal guardian will be notified.

### **Second Offense \***

1. The guidelines for first offense will be followed with exceptions as noted below.
2. The student-athlete will be suspended for 10% of the NCAA Championship season which will carry over to the following season, if necessary.
3. The student-athlete will be placed on a thirty (30) day evaluation period.

### **Third Offense \***

1. The guidelines for first offense will be followed with exceptions as noted below.
2. The student-athlete will be suspended for 20% of the NCAA Championship season which will carry over to the following season, if necessary.
3. The student-athlete will be placed on a thirty (30) day evaluation period.

### **Forth Offense \***

1. The student-athlete will be indefinitely suspended from the athletic team.
2. The Athletics Department may make a recommendation to the Office of Scholarships and Financial Aid that the student's athletics aid not be renewed.

\* The student-athlete can reduce their violation status by complying with all corrective measures for 12 months.

## **Corrective Measures for Other Non-Anabolic Drug Offenses**

### **First Offense \*\***

1. The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be tested as often as deemed necessary.
2. The student-athlete will be placed on either a ninety (90) or thirty (30) day evaluation period.
3. The student-athlete must attend counseling, evaluation, and educational sessions.
4. The student-athlete's parents/legal guardian will be notified.

### **Second Offense \*\***

1. The guidelines for first offense will be followed with exceptions as noted below.
2. The student-athlete will be suspended for 20% of the NCAA Championship season which will carry over to the following season, if necessary.
3. The student-athlete will be placed on a thirty (30) day evaluation period.

### **Third Offense \*\***

1. The student-athlete will be indefinitely suspended from the athletic team.
2. The Athletics Department may make a recommendation to the Office of Scholarships and Financial Aid that the student's athletics aid not be renewed.

\*\* The student-athlete can reduce their offense status by complying with all corrective measures for 12 months.

## **Corrective Measures for Anabolic Drug Offenses**

### **First Offense**

1. The student-athlete will be placed on probation for a period of one year. During this time the student-athlete will be tested as often as deemed necessary.
2. The student-athlete will be placed on either a ninety (90) or thirty (30) day evaluation period.
3. The student-athlete must attend counseling, evaluation, and educational sessions.
4. The student-athlete will be suspended for 50% of the NCAA Championship season which will carry over to the following season, if necessary.
5. The student-athlete's parents/legal guardian will be notified.

### **Second Offense**

1. The student-athlete will be dismissed immediately from the athletic team.
2. The Athletics Department will make a recommendation to the Office of Scholarships and Financial Aid that the student's athletics aid not be renewed.



## **APPENDIX A: DRUG TESTING PROTOCOL**

### **1. Notification of an Impending Test**

The athlete will be notified by the athletic training staff or coaching staff of the impending drug test. Notification will occur in person or with direct contact over the phone. Verifiable text messaging may be used but should be considered a secondary means of notification. Voicemail, and email are not valid means of notification. If the staff is unable to contact the individual selected for testing or the student-athlete is unavailable for testing due to unforeseen circumstances (ie. out of town), the student-athlete will be excused from testing but may be added to subsequent testing.

### **2. Drug Test Site**

The testing site will be a designated locker room/restroom area which will be deemed appropriate by the Director of Sports Medicine. The student-athlete will report at the time of the test for check-in. Proper identification (i.e. driver's license or student ID) may be needed during check-in. Check-in may be performed by either an athletic trainer or the sport coach. The student-athlete will then be identified and turned over to the custody of the drug testing crew.

### **3. Collection of Specimens for Testing**

Collection of specimens for testing will be performed by a certified collector and/or the athletic training staff. The student-athlete will provide a sample under the direct observation of the collection crew (of the same sex as the student-athlete). After a specimen is produced, the collector or athletic training staff member will test the sample for its specific gravity using a refractometer. A sample will be considered valid when a specimen has a specific gravity value that meets the standard recognized by the NCAA Drug Testing Program Manual. If the specific gravity standard is not achieved a new specimen must be supplied. Volume will also be quantified to meet the standards for the type of testing specified. pH might be used when tampering is suspected. Invalid temperature measures will be considered tampering pursuant to section 4.1 of this Program. The student-athlete must remain in the testing area until a valid sample is produced. Student-athletes may be temporarily released from the testing area by the Director of Sports Medicine for academic reasons or special circumstances. In the event that a student-athlete produces two (2) dilute samples and has a team/academic obligation which would require them to leave the facility, the collector may choose to use an alternate specimen collection technique. Alternate specimen collection technique could include saliva or other available substance or medium. Student-athletes that provide an alternate specimen may be asked to provide a specimen at a later date as designated by the Director of Sports Medicine. Samples will be sealed by the collector with the student-athlete present to ensure security. The specimens will be appropriately packaged and shipped to an independent laboratory for analysis.

### **4. Drug Testing**

Drug testing is performed by AEGIS Analytical Laboratories, Inc., Nashville, TN using a profiling system. Any, all or a combination of these profiles may be administered on a single

specimen. Each profile provides for detection of masking agents as well as the drugs listed below:

- A. The Recreational Drugs profile detects the following drugs:
  - 1. Amphetamine/Methamphetamine: Adderall, Ecstasy, and similar substances.
  - 2. Barbiturates and similar substances
  - 3. Benzodiazepines: Valium, Xanax and similar substances
  - 4. Cannabinoids, Marijuana, THC, and similar substances
  - 5. Cocaine, Crack and similar substances
  - 6. Opiates: Hydrocodone, Oxycodone, Codeine, Heroin and similar substances
  - 7. Methadone and similar substances
  - 8. Phencyclidine (PCP)
  - 9. Carisoprodol/Meprobamate
  - 10. Ephedrine and similar substances
  - 11. Methylphenidate: Ritalin, Concerta and similar substances
- B. The Anabolic Steroid profile tests for banned performance enhancing compounds (anabolic-androgenic steroids and related substances) in a manner consistent with the requirements of the International Olympic Committee and the National Collegiate Athletic Association.
- C. Specific Compounds can be isolated and tested.
  - 1. Synthetics: K2, Spice, etc
  - 2. Ephedra/Ephedrine
  - 3. Alcohol
  - 4. Any single NCAA banned substance

## **5. Classification of a Positive Drug Test**

Samples may be evaluated using an immunoassay as an initial screening for banned substances. Any sample that shows the presence of a prohibited substance is confirmed using state-of-the-art technology which may include gas chromatography-mass spectrometry (GCMS) or other applicable technology to rule out any possibility of false positive test results. Samples that are confirmed equal to or above the threshold established for that substance by the NCAA or NC State will be considered positive. Any specimen showing traces of masking agents will be considered positive.

## **6. Test Results**

The independent laboratory will notify the Director of Sports Medicine of the test results.

## **7. Notification**

The Director of Athletics, Sport Supervisor, and Head Coach will receive notice of the positive test result from the Director of Sports Medicine. Every attempt will be made to notify the student-athlete within forty-eight (48) hours of receipt of a positive test result. The student-athlete will have the opportunity to meet with the Director of Sports Medicine and a team physician/clinical addiction specialist privately to discuss any concerns regarding the positive test and possible recourses. A pathologist or drug toxicologist will be utilized as a technical

resource as needed to clarify any questions pertinent to the test. The student-athlete will be advised of the possible corrective measures. Drug counseling, evaluation, and education sessions will be arranged.

### **8. Subsequent Testing Following an Initial Positive Result**

The student-athlete will be tested frequently during the Evaluation Period. Positive test results within this period will not be considered a violation of the Program unless a different banned substance is detected. . The quantities of each substance will be normalized using a specific gravity of 1.020 to determine a measurable standard. Normalizing the samples allows for quantifiable comparison of the values obtained from test to test in each sample. Declining values from test to test cannot be used as an excuse or defense to avoid further violations outside of the Evaluation Period.

### **9. Compliance**

Compliance with the Drug Education, Screening, Counseling and Deterrence Policy and related Program, including the imposed corrective measures will be monitored by the Director of Sports Medicine. Failure to comply with any of the corrective measures imposed as a result of violation of the policy and/or program may result in the imposition of additional measures including, but not limited to, suspension from intercollegiate athletic activities, dismissal from the athletic team, and/or non-renewal and/or cancellation of athletics aid.

## APPENDIX B: DRUG TESTING THRESHOLD

The table below demonstrates NC State's Positive Threshold for specific drug classes as of 8/1/17. Thresholds may be amended periodically to correlate with NCAA thresholds

- A. The Recreational Drugs Profile:
- |                                |            |
|--------------------------------|------------|
| 1. Amphetamine/Methamphetamine | 500ng/ml   |
| MDMA/MDEA/MDA/PMA              | 100ng/ml   |
| 2. Barbiturates                | 100ng/ml   |
| 3. Benzodiazepines             | 100ng/ml   |
| 4. Cannabinoids                | 15ng/ml    |
| 5. Cocaine                     | 150ng/ml   |
| 6. Opiates                     | 100ng/ml   |
| 7. Methadone                   | 200ng/ml   |
| 8. Phencyclidine (PCP)         | 10ng/ml    |
| 9. Carisoprodol/Meprobamate    | 200ng/ml   |
| 10. Ephedrine                  | 10000ng/ml |
| 11. Methylphenidate            | 100ng/ml   |
- B. Steroids are tested at known detectable levels using GCMS or High-performance liquid chromatography (HPLC) analysis. Testosterone or any other substance which has the effect of manipulating testosterone levels will be considered positive based on a ratio of testosterone to epitestosterone which is greater than 6:1. Additional testing for Estrogen blockers and Isotope Ratio Mass Spectrometry or other emerging technology may be used to confirm positive testosterone results.
- C. Specific Compounds are tested at known detectable levels. Any single banned substance can be tested using GCMS or appropriate technology.



# NC STATE UNIVERSITY

## SPORTS MEDICINE

General Consent for Treatment and Consent to Use and Disclose Health & Medical Information

**Medical Consent to Treat:** The Office of Sports Medicine provides for the care, prevention and rehabilitation of all student-athletes at NC State University. The licensed athletic trainer, in consultation with the team physician, will determine if the care needed requires resources or competencies beyond the scope of our services, and will, with the administrative coordinator for sports medicine, provide the appropriate referral, documentation, and follow-up.

\_\_\_\_\_ I hereby authorize the Office of Sports Medicine and the NC State University team physicians, or other  
Initial healthcare professionals, to provide me with any preventative care, first-aid, rehabilitation, or surgical care including hospitalization that is deemed reasonably necessary to ensure my health and well-being.

**HIPAA/FERPA Notice:** Unless otherwise agreed to, the student-athlete's medical records on file at the Office of Sports Medicine are protected as described in the North Carolina State University Healthcare Component's Notice of Privacy Practices. You may ask the Insurance Coordinator in the Office of Sports Medicine for a printed copy of this notice, or access it online here: <http://healthcenter.ncsu.edu/wp-content/uploads/2011/09/notice-of-privacy-practices.pdf>.

\_\_\_\_\_ I acknowledge NC State University's Notice of Privacy Practices. I understand that this notice describes  
Initial how my health information may be used and disclosed, and how I can obtain access to my protected health information.

\_\_\_\_\_ I hereby grant permission to the Office of Sports Medicine at NC State University to release my protected  
Initial health information for the purpose of treatment, payment of services, and/or healthcare operations.

\_\_\_\_\_ I hereby grant permission to the Office of Sports Medicine and the Department of Athletics at NC State  
Initial University to release my protected health information pertaining to my past, present, or future participation in athletics to the news media, coaches, administrators, staff, and/or my parents/guardian.

\_\_\_\_\_ I understand that I am voluntarily authorizing the release of my protected health information and that I  
Initial have the right to revoke this authorization at any time.

I further understand that NC State cannot condition treatment on whether I sign this authorization, and that the potential exists for information disclosed pursuant to the authorization to be subject to redisclosure by the recipient and no longer be protected by federal privacy law. All disclosures made pursuant to this form are valid as long as they were made before the date of revocation.

I have read the above material regarding consent to treatment and HIPAA/FERPA as it relates to the Office of Sports Medicine and the Department of Athletics at North Carolina State University.

\_\_\_\_\_  
Student-Athlete's Name (Print)

\_\_\_\_\_  
NCSU Student ID#

\_\_\_\_\_  
Age

\_\_\_\_\_  
Signature of Student-Athlete

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of parent or guardian  
(If student athlete is under 18)

\_\_\_\_\_  
Date



# North Carolina State University

## Department of Athletics

### Licensed Athletic Trainer Protocol

- I. INJURY/ILLNESS PREVENTION & WELLNESS PROMOTION
  - A. Identify risk factors by administering assessment, pre-participation examination and other screening instruments, and reviewing individual and group history and injury surveillance data.
  - B. Implement plans to aid in risk reduction using currently accepted and applicable guidelines.
  - C. Educate individuals and stakeholders about the appropriate use of personal equipment.
  - D. Minimize the risk of injury and illness by monitoring and implementing plans to comply with regulatory requirements and standard operating procedures for physical environments and equipment.
  - E. Facilitate individual and group safety by monitoring and responding to environmental conditions (e.g., weather, surfaces and client work setting).
  - F. Optimize wellness (e.g., social, emotional, spiritual, environmental, occupational, intellectual, physical) for individuals and groups.
  
- II. EXAMINATION, ASSESSMENT, & DIAGNOSIS
  - A. Obtain an individual's history through observation, interview and review of relevant records to assess injuries and illnesses and to identify comorbidities
  - B. Perform a physical examination that includes diagnostic testing to formulate differential diagnoses
  - C. Formulate a clinical diagnosis by interpreting history and the physical examination to determine the appropriate course of action.
  - D. Interpret signs and symptoms of injuries, illnesses or other conditions that require referral, utilizing medical history and physical examination to ensure appropriate care.
  - E. Educate patients and appropriate stakeholders about clinical findings, prognosis and plan of care to optimize outcomes and encourage compliance.
  - F. Perform special testing procedures such as strength, range of motion, stability and functional testing
  - G. Determine the appropriate course of action and refer to physician if needed.
  
- III. IMMEDIATE & EMERGENCY CARE
  - A. Establish EAPs to guide appropriate and unified response to events and optimize outcomes.
  - B. Triage to determine if conditions, injuries or illnesses are life-threatening.
  - C. Implement appropriate emergency and immediate care procedures to reduce the risk of morbidity and mortality
  - D. Implement referral strategies to facilitate the timely transfer of care
  
- IV. THERAPEUTIC INTERVENTION
  - A. Optimize patient outcomes by developing, evaluating and updating the plan of care.
  - B. Educate patients and appropriate stakeholders using pertinent information to optimize treatment and rehabilitation outcomes.
  - C. Administer therapeutic exercises to patients using appropriate techniques and procedures to aid recovery to optimal function.
  - D. Administer therapeutic devices to patients using appropriate techniques and procedures to aid recovery to optimal function.

- E. Administer manual techniques to patients using appropriate methods and procedures to aid recovery to optimal function.
- F. Administer therapeutic interventions for general medical conditions to aid recovery to optimal function.
- G. Administer specialized techniques and skills obtained through continuing education and professional development to aid recovery to optimal function.
- H. Determine patients' functional status using appropriate techniques and standards to return to optimal activity level.

V. HEALTHCARE ADMINISTRATION & PROFESSIONAL RESPONSIBILITY

- A. Evaluate organizational, personal and stakeholder outcomes
- B. Develop policies, procedures and strategies to address risks and organizational needs.
- C. Practice within local, state and national regulations, guidelines, recommendations and professional standards.
- D. Use established documentation procedures to ensure best practice.

The undersigned physician and athletic trainer agree to abide by this protocol:

John Rubino, M.D.  
 Print or Type Name of Physician

\_\_\_\_\_  
 Print or Type Name of Athletic Trainer

\_\_\_\_\_  
 Signature of Physician

\_\_\_\_\_  
 Signature of Athletic Trainer

3521 Haworth Drive  
 Physician's Address

2500 Warren Carroll Dr. Box 8502  
 Employment Address

Raleigh, NC 27609  
 City, State, Zip Code

Raleigh, NC 27695  
 City, State, Zip Code

(919) 782-1806  
 Business Telephone

(919) 515-2111  
 Business Telephone



**NORTH CAROLINA STATE UNIVERSITY SPORTS MEDICINE  
STUDENT-ATHLETE MEDICAL HISTORY**

**PERSONAL DATA**

Name: \_\_\_\_\_  
Last
First
Middle

NCSU ID#: \_\_\_\_\_ Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_ Cell Phone: \_\_\_\_\_  
(MM/DD/YYYY)

Gender:  Male  Female Sport(s): \_\_\_\_\_

**GENERAL MEDICAL**

**FAMILY HISTORY:** Have you or anyone in your immediate family been diagnosed with the following?

	YES	NO	Please Explain (Family Member, Age, Etc.):
Sudden Death (Before age 50)			
Heart Disease/Heart Attack			
Heart Murmur			
Abnormal Heart Rate/Palpitation			
High Blood Pressure/Hypertension			
Diabetes			
Marfan Syndrome			
Epilepsy			
Blood Disorder			
Mental Disorder			
Stroke			
Drug and/or Alcohol Dependency			

**PERSONAL MEDICAL HISTORY:** Have you ever had or do you currently have any of the following conditions? If yes, please explain in the space provided below.

	YES	NO	DATE
Anemia/Low Blood Counts			
Appendicitis			
Asthma/Breathing Problems			
Chicken Pox			
Constipation/Diarrhea/Hemorrhoids			
Diabetes			
DVT/ Blood Clots			
Headaches/Migraines			
Hearing Impairment/Loss			
Hernia			
Hepatitis/Liver Problems/Jaundice			
Kidney Disease/Stones/Injury			
Meningitis			
Mononucleosis "Mono"			
Motion/Air/Car Sickness			

	YES	NO	DATE
Pneumonia/Frequent Respiratory Infections			
Recurrent Ear Infections			
Sexually Transmitted Disease			
Sickle Cell Disease			
Sinus Infection/Nasal Polyps/Nose Fracture			
Skin Infection/Disease			
Spleen/Liver Injury			
Stomach Problems (bleeding, ulcers)			
Stress Fracture			
Thyroid Disorder			
Tuberculosis			
Tumor/Growth/Cyst			
Urinary Problems (blood in urine, infections, etc.)			

Please Explain: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**PLEASE LIST YOUR CURRENT FAMILY PHYSICIAN:**

NAME			
ADDRESS	CITY	STATE	ZIP
PHONE	FAX		

Recent Tetanus Immunization: \_\_\_\_/\_\_\_\_/\_\_\_\_

**CURRENT MEDICATIONS/SUPPLEMENTS:** (list all prescription & over-the-counter medications, vitamins, nutritional supplements and their doses)

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

Please check the most appropriate space according to YOUR use of the following items

	Never	Rarely (1-2 x/week)	Occasionally (3-6 x/week)	Daily
Alcohol				
Tobacco				
Vitamins				
Nutritional Supplements				
Anti-inflammatories				
Laxatives				
Sleeping Pills				
Other:				

**DIETARY HABITS:**

	YES	NO	Please Explain:
Have you ever met with a nutritionist, dietitian, etc?			
Are you interested in meeting with a nutritionist?			
Do you regularly consume meat? (1-2 times a day)			
Are there certain foods/food groups you avoid eating? Please list			
Do you have any special dietary needs? (Lactose/Gluten intolerant)			
Do you have any food allergies?			
Have you ever been treated for anemia?			
Do you feel pressured by anyone to be at a specific weight?			List the weight
What do you consider your ideal weight?			List the weight
Are you happy with your current weight?			
Do you worry about your weight or body composition?			
Does your weight affect how you feel about yourself?			
How many times do you eat during a typical day?			Include meals and snacks
Have you ever tried to control your weight with: <ul style="list-style-type: none"> <li>• Vomiting?</li> <li>• Laxatives?</li> <li>• Diuretics?</li> <li>• Diet Pills?</li> <li>• Fasting?</li> <li>• Excessive Exercise?</li> <li>• Other Supplements or Medications?</li> </ul>			

**INTERNAL/SURGICAL HISTORY:**

	YES	NO
Were you born <b>WITHOUT</b> a complete set of paired organs (eyes, kidneys, ovaries/testes, etc.)?		
Have you ever had to repair/remove any organ (hernia, tonsils, appendix, spleen, etc.)?		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**ALLERGIES:**

	YES	NO
Aspirin/Anti-Inflammatories		
Codeine		
Hay Fever		
Insect Stings/Bites		
Latex		

	YES	NO
Penicillin		
Sulfa		
Any Foods:		
Any Drugs:		
Other:		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**CARDIAC HISTORY:** Have you ever had/currently have any of the following conditions?

	YES	NO
High blood pressure/Hypertension		
Low blood pressure/Hypotension		
Irregular heart beat/Palpitations		
Felt dizzy/Light-headed/Passed out during or after exercise		
Chest pain/Tightness/Discomfort with exercise		

	YES	NO
Rheumatic Heart Disease		
Seen a cardiologist		
Had an echocardiogram/EKG		
Had a stress test		
Heart murmur		

Please explain (Dates, Physician Names, etc.): \_\_\_\_\_  
 \_\_\_\_\_

**HEAT ILLNESS HISTORY:** Have you ever:

	YES	NO
Become dehydrated?		
Had heat cramps?		
Had heat exhaustion?		

	YES	NO
Had heat stroke?		
Received IV fluids?		
Had intolerance to heat?		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**PSYCHOLOGICAL/NEUROLOGICAL HISTORY:** Have you ever been diagnosed, evaluated, or treated for:

	YES	NO
ADD/ADHD		
Alcohol Abuse/Addiction		
Anxiety/Depression		
Bipolar or Schizophrenia Disorder		
Drug Abuse/Addiction		

	YES	NO
Eating Disorder (Anorexia, Bulimia, etc.)		
Epilepsy/Seizure Disorder		
Learning Disability		
Sleeping Disorder (Apnea, Narcolepsy, etc.)		
Stress Management		

	YES	NO
Have you ever met with a Psychologist/Psychiatrist?		
Are you interested in meeting with a Sport Psychologist or Psychiatrist?		

**VISION HISTORY:** Have you ever/do you currently:

	YES	NO
Had an eye injury?		
Wear glasses/contacts/protective eyewear?		
Are you color blind?		
<i>Please bring a current prescription from your physician if applicable</i>		

**DENTAL HISTORY:** Have you ever/do you currently:

	YES	NO
Had a tooth knocked out/loose/chipped?		
Wear a dental/orthodontic appliance?		
Wear a protection device?		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

Please describe any other **general medical** problems that have not been represented above.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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**ORTHOPEDIC**

PLEASE LIST YOUR ORTHOPEDIC DOCTOR/SURGEON:

---

NAME				
ADDRESS		CITY	STATE	ZIP
PHONE		FAX		

---

**ORTHOPEDIC HISTORY:**

- Explain any “**YES**” answers in the spaces provided by describing *location (left/right), nature of injury/illness, and dates*.
- Please attach any medical documents regarding any previous injuries to this form. Medical documents may include, but are not limited to: X-rays, MRI’s, CT Scans, Bone Scans, surgical notes, physician notes, etc.

**HEAD INJURY:** Have you ever had/currently have:

	YES	NO
Concussion		
Knocked Out/Unconscious		
“Bell-rung”		
Recurrent headaches/Migraines		
Face or skull fracture		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
\_\_\_\_\_**CERVICAL SPINE/NECK:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Disc injury		
Pinched nerve/Stinger/Burner		
Fracture/Dislocation		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
\_\_\_\_\_**SHOULDER/UPPER ARM:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Bursitis/Tendinitis		
Dislocation/Subluxation		
Shoulder A-C Joint Separation		
Numbness/Weakness in arm		

	YES	NO
Fracture		
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
\_\_\_\_\_**ELBOW/FOREARM:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Dislocation		
Bursitis/Tendinitis		
Fracture		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
\_\_\_\_\_

**WRIST/HAND/FINGER:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Dislocation		
Fracture		
Brace/Cast/Splint		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**SPINE/LOWBACK:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Nerve/Disc injury		
Numbness/Weakness in leg		
Radiating pain in leg		
Fracture		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**RIBS/CHEST:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Fracture		
Hospitalization/Surgery		

	YES	NO
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**HIP/GROIN:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Bursitis/Tendinitis		
Dislocation		
Fracture		

	YES	NO
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**THIGH:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Fracture		
Hospitalization/Surgery		

	YES	NO
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**KNEE:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Bursitis/Tendinitis		
Dislocation/Subluxation		
Torn cartilage/Meniscal Injury		
Swelling		
Locking/Giving away		

	YES	NO
Fracture		
Brace/Cast/Splint		
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**ANKLE/LOWER LEG:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Bursitis/Tendinitis		
Dislocation		
Instability/Weakness		
Stress Fracture/Shin Splints		
Fracture		

	YES	NO
Brace/Cast/Splint		
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

**FOOT/TOE:** Have you ever had/currently have:

	YES	NO
Injury/Sprain/Strain		
Bursitis/Tendinitis		
Dislocation		
Weakness		
Fracture		

	YES	NO
Brace/Cast/Splint		
Hospitalization/Surgery		
X-ray/CT/MRI/Bone Scan		
Missed practice/game time		
Other		

Please explain: \_\_\_\_\_  
 \_\_\_\_\_

Please describe any other **orthopedic** problems that have not been represented above.

\_\_\_\_\_

Please list any supportive/protective equipment that you currently wear while competing in your sport (braces, splints, orthotics, etc.)

\_\_\_\_\_

**WOMEN'S HEALTH HISTORY:**

	YES	NO	Comments:
Is your menstrual cycle regular?			
Have you ever gone more than 2 months without a menstrual cycle?			
Is heavy bleeding ever a problem?			
Do you ever have bleeding between periods?			
Do you ever experience any unusual discharge?			
Are cramps a frequent problem during your period?			
Do you have frequent urinary tract infections?			
Have you ever had an abnormal pap smear?			
Have you ever had a blood clot in your veins?			
Do you perform breast self examination?			
Have you ever been pregnant or given birth?			
Age of your first period?			
Date of your last period?			
Interval between periods?			
Number of periods in 12 months?			
Duration of period (# of days)?			
What brand and dose of birth control do you take (if applicable)?			
Date of your last gynecological exam?			
Date of your last pap smear?			

Please describe any other **women's health** issues that have not been represented above.

\_\_\_\_\_

\_\_\_\_\_

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**Student-athlete, please read carefully.**

The undersigned, hereby:

1. Affirms that all answers and information contained within this document is correct and true, and that no answers or information have been withheld.
2. Understands his/her having passed the physician examination does not necessarily mean he/she is physically qualified to engage in athletics, but only that the examiner did not find any medical reason to disqualify him/her.

\_\_\_\_\_  
Student-Athlete Printed Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student-Athlete Signature

Did you include your MRI's, x-rays, EKG's, medical notes, and prescriptions with your packet?

Yes  No

---

**REQUIRED: Please read carefully. The parent, guardian and/or bearer of primary insurance, will serve to verify information provided.**

The undersigned, hereby:

1. Affirms that the information contained within this document has been reviewed and is correct and true, and that no answers or information have been withheld.

\_\_\_\_\_  
Parent/Guardian Printed Name (REQUIRED)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Guardian Signature (REQUIRED)

---

*For internal NCSU use and review. Please do not write below this line. Thank you.*

---

*The undersigned, hereby:*

Serving as the assigned staff Athletic Trainer, I affirm that the information contained within this document has been reviewed and is complete.

\_\_\_\_\_  
NCSU Staff Athletic Trainer (Print)

\_\_\_\_\_  
NCSU Staff Athletic Trainer (Signature)

\_\_\_\_\_  
Date of affirmation

*The undersigned, hereby:*

Serving as the Facility Supervisor, and/or assigned Supervising Athletic Trainer, I affirm that the information contained within this document has been reviewed and is complete.

\_\_\_\_\_  
NCSU Supervising Athletic Trainer (Print)

\_\_\_\_\_  
NCSU Staff Athlete Trainer (Signature)

\_\_\_\_\_  
Date of affirmation



# NC STATE UNIVERSITY SPORTS MEDICINE

## Pre-Participation Medical Examination

Name: \_\_\_\_\_ Sport: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Examination					
Height:	Weight:	BP: /	Pulse:	Respirations:	LMP:
Vision: <input type="checkbox"/> Not-Corrected		<input type="checkbox"/> Contacts	<input type="checkbox"/> Glasses	Left:	Right:
Current Medications					
Medication:		Reason:		Frequency:	
Medical					
	WNL	Abnormal Findings			
Appearance					
Eyes/ear/nose/throat					
Lymph nodes					
Heart					
Pulses					
Chest/Lungs					
Abdomen					
Skin					
Neurologic					
Concussion History					
Previous Non-Ortho Surgeries/Major Illness					
Current Conditions					
		Recommendations:			

- Labs Reviewed as Normal       Labs: Require additional follow-up       Labs: Not Reviewed
- EKG Reviewed as Normal       EKG Reviewed: Requires additional follow-up       EKG: Not Reviewed
- Sickle Cell Trait     Asthma       Anemia       Skin Issue       Cardiac       Allergies

- Review of systems and medical history demonstrates no reason to restrict participation
- Review of systems and medical history demonstrates a need to restrict the following activities temporarily:  
\_\_\_\_\_
- Review of systems and medical history demonstrates a need to restrict activities pending further testing/notes  
 X-rays     CT/Echo     MRI     Medical Notes     Other \_\_\_\_\_
- Review of systems and medical history demonstrates a need to restrict all activities indefinitely.

\_\_\_\_\_  
Physician Signature

\_\_\_\_\_  
Date



# NC STATE UNIVERSITY SPORTS MEDICINE

## Pre-Participation Medical Examination

Name: \_\_\_\_\_ Sport: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Musculoskeletal		
	WNL	Abnormal Findings
Neck		
Back		
Shoulder/arm		
Elbow/forearm		
Wrist/hand/fingers		
Hip/thigh		
Knee		
Leg/ankle		
Foot/toes		

Previous Surgeries/Conditions

Current Conditions	
	Recommendations:

- Review of musculoskeletal conditions and medical history demonstrates no reason to restrict participation
- Review of musculoskeletal conditions and medical history demonstrates a need to restrict activities temporarily as noted above

\_\_\_\_\_  
Orthopaedic Signature

\_\_\_\_\_  
Date