

GUIDELINE 21

SPORT-RELATED CONCUSSION

June 1994 • Revised July 2004, 2009, July 2010, July 2011, July 2013, July 2014

In July 2014, the NCAA, in partnership with numerous medical and sport organizations, announced “Inter-Association Guidelines” (www.NCAA.org/ssi) that addressed diagnosis and management of sport-related concussion. The section in teal that follows is taken directly from these guidelines.

BACKGROUND

There are more than 42 consensus-based definitions of concussion. A recently published, evidence-based definition of concussion follows.¹

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 student-athlete’s health care providers.² The diagnosis and management of sport-related concussion is challenging for many reasons:

- The physical and cognitive examinations are often normal, and additional tests such as brain computerized tomography (CT), brain MRI, electroencephalogram and blood tests are also commonly normal. Although comprehensive neuropsychological tests may be a useful adjunctive tool supporting the diagnosis of sport-related concussion, there remains controversy regarding interpretation and utility as a clinical tool.
- 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, in providing a management plan, and in making both return-to-play and return-to-learn recommendations.³⁻⁷
- “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 [SAC] 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.^{8,9}
- 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.

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 mandates that institutions implement the following:¹⁰

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; and
4. A policy that requires medical clearance for a stu-

dent-athlete diagnosed with a concussion to return to athletics activity as determined by a physician or the physician’s designee.

GUIDELINES

The goals of developing guidelines 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).

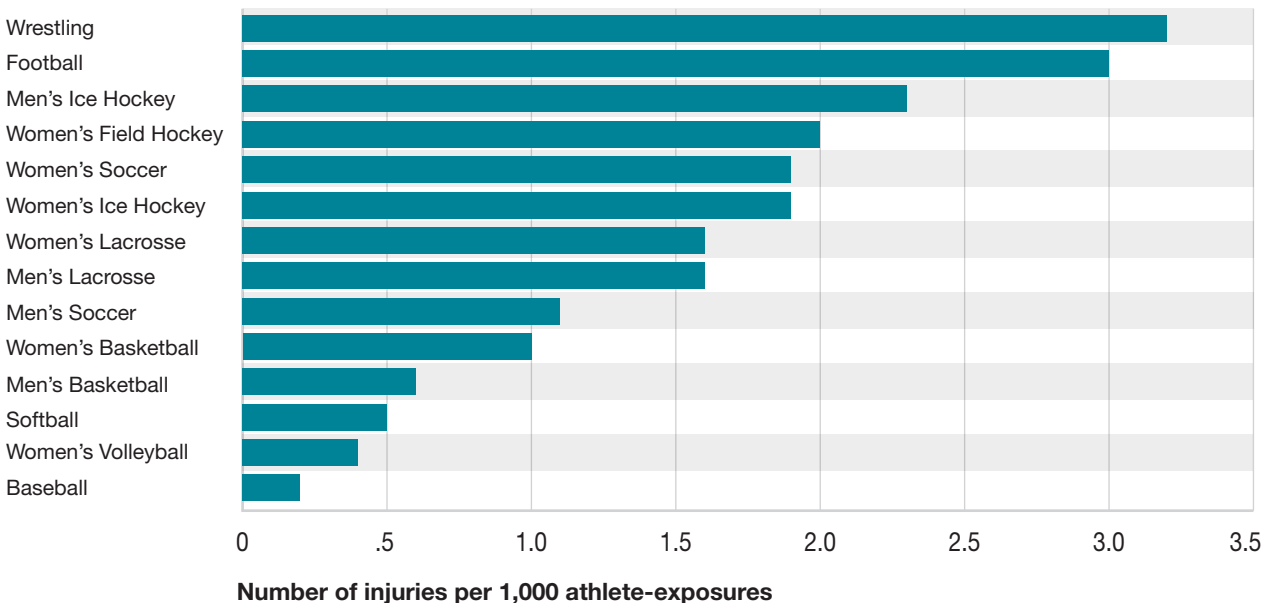
CONCUSSION MANAGEMENT PLAN

Institutions should make their concussion management plan publically 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,



Figure 1: Rate of competition concussion injury in 14 NCAA sports



Data from 2004-05 to 2013-14. Overall practice and game injury rates for each sport can be found in

coaches, team physicians, athletic trainers, and athletics directors. There should be a signed acknowledgment 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; and
- Balance evaluation.

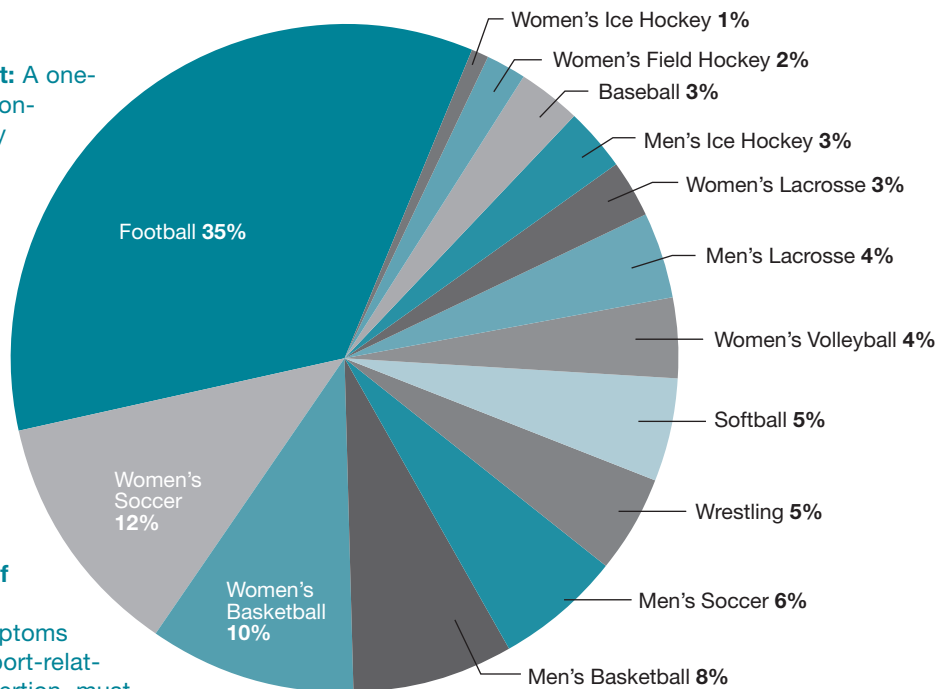
The team physician should determine pre-participation clearance and/or the need for additional consultation or testing.¹¹

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.

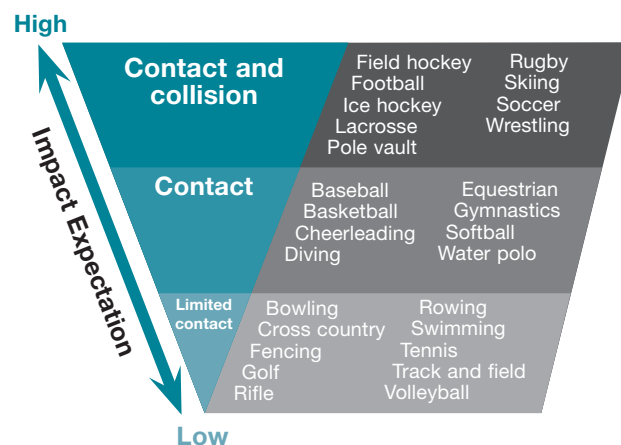
4. Post-concussion management: The foundation of sport-related concussion management is initial physical and relative cognitive rest as part of an individualized treatment plan.² Initial management of sport-related concussion is based on individual serial clinical assessments, taking a concussion history,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

Figure 2: National annual estimate of concussions for practice and competition in 14 NCAA sports



Data from 2009-14.

Figure 3: Impact expectation by sport



- 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

SIGNS AND SYMPTOMS OF CONCUSSION

Physical

- Headache
- Nausea
- Vomiting
- Balance problems
- Fatigue
- Sensitivity to light
- Numbness/tingling
- Dazed
- Stunned

American Medical Society for Sports Medicine 2013 Position Stand

Cognitive

- Feeling mentally “foggy”
- Feeling slowed down
- Difficulty concentrating
- Difficulty remembering
- Forgetful of recent information and conversations
- Confused about recent events
- Answers questions slowly

Emotional

- Irritable
- Sad
- More emotional
- Nervous

Sleep

- Drowsiness
- Sleeping more than usual
- Sleeping less than usual
- Difficulty falling asleep

exam should be performed. Brief concussion-evaluation tools such as the Standardized Concussion Assessment Tool 3 (SCAT3), which includes the Standardized Assessment of Concussion (SAC), provide standardized methods and can be compared to a baseline evaluation.¹²

- 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 vomiting; 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.¹²

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.¹³ 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.¹³ 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.⁷ Passive management, such as prolonged physical and cognitive rest, may be counter-productive in these scenarios.

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.¹² Most return-to-play protocols are similar to those in the Consensus Statement on Concussion in Sport guidelines,² 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.¹⁴⁻¹⁵ McCrea and colleagues¹⁶ 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.⁸⁻⁹ In summary, it should be recognized that current return-to-play guidelines are based on expert consensus.

There is emerging evidence that focused exercise or recovery techniques may be utilized before full recovery

has occurred, but more study is needed. Given the paucity of scientific evidence regarding return-to-play and expert consensus documents that have been published, adherence to consensus guidelines is 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). In scenarios of this nature, and with experienced clinicians in a highly select setting, the return-to-play protocol may be modified.¹⁷ 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.¹²

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.⁷ 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. Mode, duration and intensity-dependent exercise based upon sport. If asymptomatic with such exertion, then;
3. Sport-specific activity with no head impact. If asymptomatic with sport-specific activity, then;

4. Non-contact sport drills and resumption of progressive resistance training. If asymptomatic with non-contact drills and resistance training, then;
5. Full-contact practice. If asymptomatic with full-contact practice, then;
6. Return-to-play. 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 physician 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,^{6,18-20} 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 a brain energy crisis.³ 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.²⁰ 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

STEPWISE RETURN-TO-PLAY PROTOCOL

1. Light aerobic exercise (Walking, swimming or stationary cycling; no resistance training.)

2. Mode, duration and intensity-dependent exercise based upon sport

3. Sport-specific activity with no head impact

4. Non-contact sport drills and resumption of progressive resistance training

5. Full-contact practice

6. Return to play

of concussion symptoms following cognitive exposure. The consensus to date includes:^{3,19}

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 (ADAAA). Sometimes there is a separate disability office and ADAAA office. In this case the first resource is the campus disability office. Concussion and mild traumatic brain injury are covered under ADAAA.

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.

SPORTS PARTICIPATION DEFINITIONS AND CONCUSSION EPIDEMIOLOGY

Concussion incidence varies among sports. The American Academy of Pediatrics published a classification of sports by contact in 2001. Then in 2013, the American Academy of Neurology's statement described contact and collision sports as those in which athletes purposely hit other athletes or inanimate objects. The purposeful collisions put athletes participating in this class of sports at greater risk for concussions. Limited contact sports were described

as those in which the force and the frequency of collisions, whether with other athletes or inanimate objects, are decreased. Noncontact sports were described as those in which players do not come in contact with athletes or inanimate objects by force.

The rate of concussion in NCAA sports can be assessed in various ways. Figure 1 demonstrates the rate of competition concussion per 1,000 student-athlete exposures. It is noteworthy that the higher rates occur in contact/collision sports. All meaningfully measurable rates occur in either contact/collision or limited contact/impact sports. It is also noteworthy that women have a higher rate of concussion than men for soccer and basketball. Another way to look at concussion is through annual estimates of the actual number of concussions within the sport, combining both practice and competition sessions. Figure 2 depicts the percentage of concussions from each sport given the total number of concussion in 14 NCAA sports.

Because of the large size of football teams and the higher rate of concussion relative to other sports, concussion incidence is highest in football. In assessing the available data, anticipating concussion risk can be made based on the sport; anticipating concussion risk can also be guided by impact expectation. For each sport, it is important to follow the institution's concussion management plan.

The NCAA reviewed various concussion guidelines in addition to the injury data across sports to classify sports by an expectation for impacts and collisions. Unlike the previous two classifications, this classification (Figure 3) lists lower-tier sports as limited contact because athletes are still at risk of a concussion both in sports and daily life.

POST-CONCUSSION RAMIFICATIONS

There is considerable controversy with regard to long-term implications of concussion. On one end of the spectrum, some claim that repeated concussions cause a neurodegenerative brain disease called chronic traumatic encephalopathy or CTE. On the other end of the spectrum, some claim that there are no significant long-term sequelae of concussion. The murky evidence lies somewhere in between.

Post-Concussion Syndrome. Post-concussion syndrome refers to prolonged concussion symptoms following concussion. It is not truly a "syndrome" because there is no core of consistent symptoms and there is no clear correlation with type or severity of concussion, biomarkers, or genetic/personality predisposition.

NCAA CONCUSSION POLICY AND LEGISLATION

The NCAA Executive Committee adopted (April 2010) the following policy for institutions in all three divisions:

“Institutions shall have a concussion management plan on file such that a student-athlete who exhibits signs, symptoms or behaviors consistent with a concussion shall be removed from practice or competition and evaluated by an athletics health care provider with experience in the evaluation and management of concussions. Student-athletes diagnosed with a concussion shall not return to activity for the remainder of that day. Medical clearance shall be determined by the team physician or his or her designee according to the concussion management plan.

“In addition, student-athletes must sign a statement in which they accept the responsibility for reporting their injuries and illnesses to the institutional medical staff, including signs and symptoms of concussions. During the review and signing process, student-athletes should be presented with educational material on concussions.”

NCAA adopted concussion management plan legislation

An active member institution shall have a concussion management plan for its student-athletes. The plan shall include, but is not limited to, the following:

- (a) An annual process that ensures student-athletes are educated about the signs and symp-

oms of concussions. Student-athletes must acknowledge that they have received information about the signs and symptoms of concussions and that they have a responsibility to report concussion-related injuries and illnesses to a medical staff member;

- (b) A process that ensures a student-athlete who exhibits signs, symptoms or behaviors consistent with a concussion shall be removed from athletics activities (e.g., competition, practice, conditioning sessions) and evaluated by a medical staff member (e.g., sports medicine staff, team physician) with experience in the evaluation and management of concussions;
- (c) A policy that precludes a student-athlete diagnosed with a concussion from returning to athletic activity (e.g., competition, practice, conditioning sessions) for at least the remainder of that calendar day; and
- (d) A policy that requires medical clearance for a student-athlete diagnosed with a concussion to return to athletics activity (for example, competition, practice, conditioning sessions) as determined by a physician (e.g., team physician) or the physician’s designee.

Effect of violation. A violation of Constitution 3.2.4.17 shall be considered an institutional violation per Constitution 2.8.1; however, the violation shall not affect the student-athlete’s eligibility.

Symptoms may be neurologic (e.g., dizziness, light sensitivity), cognitive (memory, attention deficits) and emotional (depression, anxiety). Post-concussion syndrome is best considered a neuropsychiatric disorder, and it is important to recognize that it has no bearing on the extent of, or expected recovery from, concussion. Post-concussion syndrome is best managed in a multidisciplinary manner that includes gradual increase in physical and cognitive activity. Management is distinctly different from acute concussion management, and individuals should not simply be relegated to prolonged rest, which may perpetuate the symptomatology.

Chronic Neurobehavioral Impairment. Cognitive and executive dysfunction has been described following multiple concussions. However, only two Class I studies exist, and these are for jockeys and rugby players. There

are seven Class II studies that include boxers, NFL players and soccer players, which demonstrate long-term cognitive impairment. Two studies show an association with apoE4 genotype, suggesting a genetic predisposition, and one study shows an association with a prior history of learning disability. There is one Class III study of NFL players. There is some correlation with magnitude of exposure and chronic neurobehavioral impairment in professional athletes, but the relationship between exposure and chronic neurobehavioral impairment in amateur athletes is uncertain. This may be from a combination of underpowered studies and possible brain adaptations that are different in younger individuals.

Depression. Depression also has been reported as a possible long-term manifestation of repeated concussion. Two Class II studies of retired NFL players note

an increased rate of depression in a dose-response manner, and one Class III study of retired NFL players notes a higher depression rate than the general population. There are also studies that show no clear relationship between depression and prior concussion. Of note: about 21 percent of college student-athletes report depression at baseline.

Chronic Traumatic Encephalopathy (CTE). CTE is a progressive neurodegenerative disease whose pathologic hallmark is abnormal tau deposition, with clinical manifestations of mood disorder, neuromuscular incoordination, dementia and death. There are not agreed-upon pathological and clinical criteria for CTE, although it seems clear that CTE is a distinct clinical entity from Alzheimer's disease. In a 2012 publication of CTE case series (Brain), CTE is described as a "progressive tauopathy that occurs as a consequence of repetitive mild traumatic brain injury." In the Zurich 2012 consensus paper, it is noted that "it is not possible to determine the causality or risk factors [of CTE] with any certainty. As such, the speculation that repeated concussion or sub-concussive impacts cause CTE remains unproven." The universal consensus in the NCAA Concussion Task Force was that we need to better understand CTE with regard to genetic predispositions and biomarkers. No task force member noted a clear cause-and-effect relationship between concussion and CTE.

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ENDORSEMENTS

The 'Consensus Best Practice, Diagnosis and Management of Sport-Related Concussion' has been endorsed by:

- American Academy of Neurology
- American College of Sports Medicine
- American Association of Neurological Surgeons
- American Medical Society for Sports Medicine
- American Osteopathic Academy for Sports Medicine
- College Athletic Trainers' Society
- Congress of Neurological Surgeons
- National Athletic Trainers' Association
- NCAA Concussion Task Force
- Sports Neuropsychological Society

RESOURCES

- **NCAA Concussion Fact Sheets and Video for Coaches and Student-Athletes**
Available at NCAA.org/SSI.
- **Heads Up: Concussion Tool Kit**
CDC. Available at www.cdc.gov/ncipc/tbi/coaches_tool_kit.htm.
- **Heads Up Video**
NATA. Streaming online at www.nata.org/Heads-Up.