Oregon State University
Sports Medicine

Concussion Management Plan

Purpose:
The Oregon State University Sports Medicine staff recognizes that concussions are serious injuries that require a comprehensive and carefully measured approach to management. This plan was created with the understanding that each concussion, as well as each student-athlete, is unique.

Individualizing concussion management, considering each student athlete's complete medical history, and close physician involvement are the hallmarks of this concussion plan and are essential for the safety of our student-athletes. All members of OSU's athletic department are responsible for supporting, administering, and adhering to this plan. Failure to follow this plan may lead to disciplinary action up to and including termination from employment. This concussion plan is based on prevailing current knowledge and inter-association guidelines for concussion evaluation and management and is intended to be an evolving document.

Introduction:
Concussion management in athletics is a dynamic and individual process. Each athlete will experience trauma to the head in a different manner, with differing recovery paths and timeframes. Concussions are complicated by several factors, including but not limited to previous head injury, dehydration, medical conditions, Attention Deficit Hyperactivity Disorder (ADHD), and medications. International experts have convened in attempts to develop guidelines and consensus statements and have concluded that no single approach is applicable to all concussions however a general framework has been established as an accepted approach to concussion care (InterassociationGuidelines).

Definition:
Concussion is defined as a complex pathophysiological process affecting the brain and induced by traumatic biomechanical forces. It is most commonly characterized by the rapid onset of a constellation of symptoms or cognitive impairment that is self-limited and resolves spontaneously.

Concussion Education:
Due to the severe nature of a concussion, Oregon State University believes in a conservative, two-pronged approach for treatment. First, student-athletes are responsible for self-reporting his or her symptoms after suffering a concussion. Self-reporting of symptoms plays an integral role in tracking the severity and subsequent recovery of a concussion. Therefore, the student-athlete is responsible for reporting his or her signs and symptoms completely and honestly to the staff Certified Athletic Trainer and/or Team Physician as soon as they present and each day following the injury.

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In an effort to reinforce the importance of self-reporting and ensure that student athletes know what to report, student-athletes will be annually presented with educational materials that provide information about the mechanisms of head injury, signs and symptoms of a concussion, and the dangers associated with an unreported concussion. Subsequently, it will be required that all student-athletes sign the Oregon State University Student-Athlete Concussion, Injury and Illness Agreement to Self-Report, a statement certifying that the student athlete has received and understood the educational material presented, and are accepting responsibility for truthfully reporting of his or her injuries and illnesses, including signs and symptoms of a concussion.

Second, all OSU athletic department members are responsible for reporting any signs or symptoms of a concussion that he or she witnesses to the OSU sports medicine staff. As such each coach (including volunteer coaches), athletic trainer, physician, sport administrators, strength coaches, and athletic directors at Oregon State University must undergo concussion education annually so that they are better prepared to be able to identify and respond to a concussion. Each individual who completes the concussion process must sign a statement of compliance which will be kept on file within the compliance office.

Baseline Assessment:
Every student-athlete will have a pre-participation physical exam with a team physician. Prior to that encounter, the student athlete must complete a health history physical questionnaire, which includes a history of previous concussions, learning issues and ADHD. Each physical exam should include a brief neurological assessment with attention paid to those athletes with previous concussion histories. As part of the pre-participation physical process, and before clearance for team activities, all athletes participating in NCAA sports must have a baseline neurocognitive exam, such as IMPACT, and must also complete a balance testing evaluation, such as BESS. More extensive neuropsychological evaluation may also be considered and ordered by the team physician as needed.

Additionally, those athletes who suffer a concussion after initial clearance must have a repeat baseline evaluation that must occur after a minimum interval time of 6 months.

Recognition and management:
Recognition is the first step in the evaluation and management of concussion. The athletic trainer is most often the initial evaluator of concussions and is responsible for knowing the various categories of possible signs and symptoms of concussion. If the team physician is present, he/she must participation in the evaluation process. For each NCAA varsity competition involving contact/collision sports (basketball, football, pole vault, soccer, and wrestling) medical personnel with training in the diagnosis,

treatment and initial management of acute concussion will be present at the competition site. Further, for each sport practice of our intercollegiate teams that involve contact/collision sports (basketball, football, pole vaulting, soccer and wrestling) medical personnel with training in the diagnosis, treatment and initial management of acute concussion will be reachable by immediate communication means (for example: phone, radio, pager) for consultation, discussion and management recommendations.

Possible signs and symptoms of a concussion include, but are not limited to, the following:

1. Cognitive symptoms
    a. Level of consciousness, Confusion, Orientation
    b. Amnesia - Post-traumatic, Retrograde (less common)
    c. Concentration, Registration
2. Physical symptoms (headache, dizziness, nausea, fatigue)
3. Cranial Nerve Findings
    a. Pupils → Need to be equal, and reactive to light
    b. Diplopia, nystagmus, photophobia, phonophobia
4. Balance abnormalities (Gait, Romberg)
5. Mood Related Symptoms (insomnia, irritability, sadness)

When a student-athlete self-reports or otherwise exhibits signs and symptoms that raise a concern for a concussive event, the athlete must be removed from participation in their sport and must be evaluated by a certified athletic trainer or team physician. The evaluator must perform a symptom assessment, physical and focused neurological exam including brief tests to assess neurocognitive function, such as memory and attention, balance exam and clinical assessment for cervical spine trauma, skull fracture and intracranial bleed. SCAT may be used as a tool to assist in part of this evaluation process.

The athletic trainer will document all pertinent information surrounding the evaluation and management of any suspected concussions, including but not limited to the following:

1. Mechanism of injury.
2. Initial signs and symptoms assessment.
3. State of consciousness.
4. Findings on serial testing of symptoms, neurocognitive function, and balance.
    a. Noting deficits compared with baseline.
5. Instructions given to the athlete, parent or roommate.
6. Recommendations given by the physician.

7. Graduated RTP progression
    a. Including dates and specific activities involved in the athlete's return.
8. Relevant information regarding the athlete's history of prior concussion & recovery pattern.

Immediate & Home Care:

If it is determined by the team physician (or if he/she is not present, the athletic trainer) that a concussion has occurred or cannot be reasonably excluded, the athlete must be removed from play and or competition and must not be returned to play in the same day.
The emergency action plan must be followed, including transportation for further medical care, for any of the following: Glasgow Coma Scale < 13, Prolonged loss of consciousness, Focal neurological deficit suggesting intracranial trauma, Repetitive emesis, Persistently diminished/worsening mental status or other neurological signs/symptoms or possible spine injury. The team physician should be notified if he/she is not present during the immediate post-concussion care.

The athletic trainer must develop a mechanism for serial monitoring of symptoms and if symptoms worsen, the team physician must be contacted by phone or in person.
Once on home care, if the student athlete experiences any of the following, he/she must contact the team physician (or, if unreachable, the athletic trainer):

Worsening Headache
Repeated Vomiting
Decreasing Level of Consciousness
Dilated, Unreactive or Unequal Pupils
Increased Confusion
Stumbling/Loss of Balance
Weakness in one arm/leg
Blurred or Tunnel Vision
Increased Irritability

An overnight contact (typically a roommate, friend, or significant other) must be established to assist in monitoring the condition of the concussed student-athlete over the first 24 hours. An instructional form for home care of the concussion has been developed and must be provided and explained to both the student-athlete and the overnight contact before the concussed student-athlete is allowed to leave the venue. This instruction must include special attention paid to warning signs that would warrant that the student-athlete seek immediate medical attention. A follow-up with Oregon State University Sports Medicine staff must be scheduled within 24 hours of the injury and recorded on the home care instruction form. The athletic trainer must make a copy of the completed home care instruction form to be kept with the medical records.

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Physician Referral &Neurocognitive Testing:
All athletes with suspected concussion must be referred to the team physician for evaluation and diagnosis within the first 24 hours of injury whenever possible. In the event that a concussion occurs while the team on out of town or the team physician is unavailable for any other reason, the physician must be informed of the injury by phone by the athletic trainer.

A post-injury neurocognitive test will be conducted by ATC staff when directed by the team physician, or when the athlete's symptom score returns to baseline levels. Repeat neurocognitive testing without physician approval should not occur. There is rarely a need to test more than twice post-injury. The more frequently the test is done, the less reliable are the results.

Post-Concussion Course:

1. Expected or "Typical" Course
    a. Symptoms typically include headache, along with sensitivity to light and sound, nausea, dizziness, blurry vision, confusion, memory and concentration problems, among others. Typically there is a gradual resolution of symptoms over a few days, with a fairly predictable decrease in the number and severity of symptoms. Balance issues usually resolve first. Headache is often the last symptoms to resolve, which can often be worsened with exertion (valsalva) and movement.
2. Prolonged symptoms
    a. A student athlete who has prolonged symptoms in the recovery process must be re-evaluated by a physician if the symptoms continue past a seven day period. The physician will perform an assessment and evaluation of the student athlete to include consideration for additional diagnosis or problems such as Post- concussion syndrome, Sleep dysfunction, Migraine or other headache disorders, Mood disorders such as anxiety and depression, and Ocular or vestibular dysfunction. Best management options for these concomitant diagnoses will be initiated.

Return to Play:

The student-athlete must be re-evaluated periodically by the sports medicine staff with experience in concussion management to assess recovery of the concussion. Any future return to play decisions will

be made by the team physician based on the initial evaluation and follow-up assessments of the sports medicine staff and must follow the outline below:

1. **The athlete may only start his/her return to activity after a physician evaluates the athlete and determines that the athlete is ready to begin the return to play procedure**. A concussion symptom score must be recorded every 24 hours, as medically necessary.

2. **After being determined ready to begin the return progression**, the student athlete may begin his/her return to activities as follows. Unless otherwise approved by the team physician, each stage in the progression must take a minimum of 24 hours, and be clearly documented and provided for the physician upon follow-up.
    a. Stage 1 – No activity – physical & cognitive rest.
    b. Stage 2 – Light Aerobic Exercise
        i. Stationary bike for 15 minutes at <70% MHR.
        ii. No resistance training.
    c. Stage 3 – Sport Specific Cardiovascular Exercise
        i. Progressive conditioning drills specific to the sport, no resistance training.
        ii. For example, bike sprint intervals→ half gassers.
    d. Stage 4 – Non-contact Training Drills
        i. Progress to more complex sport specific training drills, begin resistance training.
        ii. For example, passing drills in football, agilities.
    e. Stage 5 – Unrestricted Training
        i. Following clearance by team physician, may participate in full practice activities or full workouts.

    f. Stage 6- Return to Competition may occur after the team physician releases the athlete.

3. Monitor for changes in symptoms or mental status by Sports Medicine Staff.
    a. If the athlete develops any symptoms during or after any of the exercise sessions, he/she must stop and rest for the remainder of the day. He/she may not return to exercise again until Sports Medicine Staff determine the athlete is asymptomatic. He/she may then return to the previous attempted level of exercise, and continue to graduate along the protocol.
    b. Challenge balance pre- & post-exercise at each stage (i.e. modified BESS).

4. The physician will determine if an additional neurocognitive test should be completed. It must not be taken within 3 hours of strenuous physical activity. This neurocognitive test must be reviewed by the physician prior to clearing the student athlete to return to practice activities in stage 4. If the student athlete has successfully completed stages 1-4, along with a normal

neurocognitive test (as determined by the physician), he/she may then be cleared for full participation.

Academics and Return to Learn:

A concussion, no matter how mild it may seem at the time, causes disruption in the normal brain activity and metabolism. After concussion any mental demand can bring about worsening symptoms and potentially a delay of healing from a concussion. Therefore when a student-athlete is diagnosed with a concussion the student-athlete will be removed from academics and no return to class shall occur the same day of the concussion.

Much as in return to play a stepwise progression will occur for student athletes return to learn in the post-concussion period with respect to mental and learning challenges. The student athlete will be aided in the navigation of the return to learn protocol by the Faculty Athletics Representative (FAR). In the event the FAR is not available, the head of academic support for student athletes will assist the student athlete. The student athlete is responsible for contacting their professors to notify them of the injury and also for communicating with the FAR all academic obligations they currently have at the time surrounding the injury. The athletic trainer will notify the FAR, the Office of the Dean of Student Life and the Office of Disability Access Services as soon as reasonably possible that the student athlete has had a concussion and the symptom score from the SCAT.

Unlike return to play when an athlete must be completely back to baseline and able to progress through several challenges, the student need not be 100% symptom free to begin the return to learn process as long as the necessary accommodation are in place for the student. This process should be multidisciplinary and involve several key individuals: Faculty Athletic Representative, Team Physician, Instructors, Academic Advisor, Dean of Student Life representative and the Office of Disability Access Services (DAS) among others. The process will comply with all applicable state and federal laws.

The steps in return to learn that will be followed are:

1. FAR, Office of Dean of Student Life and Office of Disability Access are notified simultaneously of the concussion
2. No return to class room or study groups the day of the concussion
3. The appointed person may assist the athlete in contacting the student athlete's professors to inform them of the concussive episode.
4. At home or in their normal living environment the student will attempt short mental challenges the following day.

- If the student is able to concentrate on mental activity for up to 20 minutes at a time without worsening of symptoms then they are encouraged to study and work on academic challenges in 20 minute intervals with breaks in between. This time duration may be increased as the student is able.
- If symptoms prevent the student from concentrating on mental activity or worsen, rest is required. The student should be kept on mental rest with no (or very limited) television, texting, reading, homework.

5. When symptoms allow the student to concentrate on mental activity for up to 40 minutes at a time, the student may return to the lecture arena. It is important to note that sequential timing of classes (i.e., back-to-back classes) should be avoided if possible.
6. If symptoms do not permit return to classroom and academic work within 5-7 days after the concussion occurred, or the symptoms are progressing, the student athlete will be re-evaluated by the team physician.
7. The Faculty Athletics Representative will work with representatives from the offices of the Dean of Student Life and Disability Access Services, the professors and the athlete in determining if any schedule and academic accommodations are needed during the first 14 days. The FAR may rely on the input from the student, physician, mental health provider, student athlete academic advisor, Dean of Student Life representative, Disability Access representative, or any others necessary in determining if any changes need to be made.
8. In the event the student athlete's symptoms progress beyond 14 days to the point it prevents the student athlete from fully participating in the academic realm, a multi-disciplinary team will meet to help navigate the more complex cases.
    - The multi-disciplinary team may consist of any combination of the following that best helps the student athletes unique situation:
        i. Team physician.
        ii. Athletic trainer.
        iii. Psychologist/counselor.
        iv. Neuropsychologist consultant.
        v. Faculty athletic representative.
        vi. Academic counselor.
        vii. Course instructor(s).
        viii. College administrators.
        ix. Dean of Student Life.
        x. Office of Disability Access Services representative

9. The resources available on campus that may be engaged in student athletes cases where they are unable to continue in their normal learning progression for any class or term.
    - Office of Disability Access Services
    - Office of Equity and Inclusion
    - Academic Advisor
    - Department of the Registrar

Reducing Exposure to Head Trauma:

The sports medicine staff, team physicians, and athletics administration understand and support the initiatives of the NCAA and other organizations in their efforts to reduce exposure to head and facial trauma. As such coaches and athletics staff members should adhere to the Inter-Association Consensus: Year-Round Football Practice Contact Guidelines. Furthermore, as members of the Pac-12 the football staff should follow the Pac-12 and NCAA rules on contact practices.

2. Reducing Exposure to Head Trauma in Sports other than Football.

All coaches and teams should take attempts to reduce gratuitous contact during practice and embody a philosophy of taking a 'safety first' approach to sport. Head Coaches are expected to instruct their coaches and student-athletes regarding safe play and proper techniques so as to reduce potential exposure to unnecessary head trauma.

Any athletics staff member or other individual who feels that a safety first approach is not being taken can inform the Director of Sports Medicine or the Athletics Director of their concerns. All situations that are brought forward will be investigated and corrective action will be taken as necessary.

3. Independent Medical Care

It is always important to emphasize the Inter-Association Consensus: Independent Medical Care Guidelines which state that the Institutional medical line of authority should be established independently of a coach, and in the sole interest of student-athlete health and welfare. Medical line of authority is transparent and evident at Oregon State University, and collaborative interactions with the medical director and primary athletics health care providers (defined as all institutional team physicians and athletic trainers) exist so that the safety, excellence and wellness of student-athletes is evident in all aspects of athletics and are student-athlete centered.

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Our sports medicine staff, including athletic trainers and physicians, are expected to communicate and intervene anytime they feel there is unreasonable risk to the health of the student athlete. They are empowered by unchallengeable autonomous decision making in regards to return to play and removal from play of our student athletes in regards to health and safety of the student athlete at Oregon State.