



ARIZONA STATE UNIVERSITY

Sun Devil Athletics

(480) 965-3850 (Phone) (480) 727-0006 (Fax)

MILD TRAUMATIC BRAIN INJURY/CONCUSSION PROGRAM

Education:

Arizona State University Sun Devil Athletics ensures annual concussion education for all of the following:

- Student athletes
- Coaches
- Team physicians
- Athletic training staff
- Strength and conditioning coaches
- Directors of athletics/sport administrators

During the pre-participation physical and prior to clearance, all student athletes receive information about concussions, including the link to the NCAA Concussion website and fact sheet, and they acknowledge receipt of the ASU concussion statement via signature. Additional targeted clinical education on concussion is provided to student athletes upon resolution.

Additional education includes explanation of what constitutes a concussion, the medical need to be protected by being pulled from harm's way until resolved, and the process of knowing what to expect through the return to learn and return to play regimens. This education is available to all SDA staff and student athletes. All student athletes, coaches, team physicians, athletic trainers, and athletic directors provide a signed acknowledgement of having received, read and understood the provided concussion material.

Reducing Exposure to Head Trauma:

While eradicating concussions completely is impossible, ASU will continue to emphasize ways to minimize head trauma exposure. ASU will continue to adhere to Interassociation Consensus Statements: Year-Round Football Practice Contact Recommendations and Independent Medical Care for College Student Athletes Best Practices. All ASU teams will reduce and aim to remove all gratuitous contact during practice and will maintain a safety-first approach. Further education will continue to optimize technique and safe play, including taking the head of out contact and tackling.

Pre-participation Assessment:

The pre-participation exam, performed on all freshman and transfer student athletes, includes an extensive brain/concussion history and examination.

Arizona State University has utilized the neurocognitive ImPACT test since its inception for its baseline concussion assessment. ImPACT is a 25-minute online test delivered by secure web portal. It includes symptom evaluation and cognitive assessment segments. The test is administered on a desktop computer in a quiet room free of distractions and cell phones (such as a computer lab) in the presence of an athletic trainer, coach, or other SDA staff.

All student athletes have a baseline ImPACT assessment with the sport's athletic trainer reviewing the validity of the test. Validity of ImPACT test is determined as an acceptable cognitive index (>0.2) and the lack of any asterisk or red flag.

Invalid tests will be discussed with the team physician and repeated after a minimum of 36 hours.

All student athletes have their balance evaluated every 2 years with the modified Balance Examination Scoring System (m-BESS) test, while in street clothes and barefoot. This includes the Double Leg Stance, Single Leg Stance (non-dominant foot), and the Tandem Stance. Additional m-BESS testing may also occur in other uniform configurations as determined by the team physician and athletic trainer.

All student athletes will have a repeat baseline ImPACT performed every two years, regardless of sustaining a head injury or not.

In addition, all high-risk sport student athletes will undergo the most updated Sport Concussion Assessment Tool (SCAT) exam every 2 years. High risk sports include: baseball, basketball, beach volleyball, diving, football, gymnastics, ice hockey, lacrosse, pole vaulting, soccer, softball, triathlon, volleyball, water polo, and wrestling.

The team physician will have final determination of pre-participation medical clearance and the need for additional testing based on the student athlete's history and examination.



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Recognition and Diagnosis of Concussion:

Any severe neurologic occurrence initiates the Emergency Action Plan (EAP), which is specific to each practice and competition venue.

Severe neurological conditions include but are not limited to: Glasgow <13, prolonged loss of consciousness, focal neurologic deficit suggesting intracranial trauma, repetitive emesis, persistent and worsening mental status or other neurologic signs and symptoms, skull fracture, intracranial bleed and spine injury of any type.

The team physician (if present), athletic trainer, or designee is the director of all activities once the EAP is initiated. He/she directs the team in appropriate neurologic assessment and coordination of previously assigned duties of each team member. EMT units are updated on every game day as to the EAP and transport of all neurologic conditions to Barrow Neurological Institute.

All team physicians and athletic trainers receive annual education and training regarding concussion diagnosis, treatment and initial management. Outlined below is the specific protocol for recognition and diagnosis of concussion:

Medical personnel including team physicians and athletic trainers are trained in the diagnosis, treatment, and initial management of acute concussion. Medical personnel are on site at the campus or arena of competition for all NCAA contact/collision practices and competitions, including basketball, football, ice hockey, lacrosse, pole vault, soccer and wrestling.

Team physician and/or athletic trainer will briefly observe each team unit every time off the field.

ASU utilizes the football spotter program in conjunction with the Pac-12 initiatives. We also utilize a sideline spotter for home soccer games. As such, any impact that generates concern for a potential head injury is communicated to the team physician and athletic trainer who immediately evaluates that athlete when able to remove that athlete from play.

All student athletes suspected of sustaining a head injury are removed from competition and not permitted to return to activities until further evaluation is performed in coherence with this protocol. Student athletes should be escorted to the team physician with helmet or other key equipment removed.

Documentation will occur in the medical record with physician evaluation or in Presagia with ATC evaluation if MD is not present.

Sideline Concussion Assessment:

- ✓ General Questions: Do you remember what happened? Did you black out or lose consciousness? Do you have a headache, neck pain, or pain/tingling down extremities? Do you have blurred or double vision, or sensitive to light? Do you feel dizzy or lightheaded, feel like in a fog?
- ✓ Maddock's questions: What venue are we at? What half is it? Who scored last? What team did you play last game? Did ASU win last game?
- ✓ Exam: Cervical/Head exam, extraocular movement eye exam, single and tandem balance testing with eyes closed

Abnormal sideline concussion assessments are pulled from practice/competition and will be escorted to the locker room or other quiet designated area where the team physician(if present), athletic trainer, or designee will perform a complete version of the most up-to-date SCAT exam including a full symptom assessment, physical and neurologic exam, cognitive assessment, and balance exam. Diagnosis of a concussion will be made or confirmed by a physician trained in evaluation of concussions.

Cleared student athletes should be on the team physician(if present), athletic trainer, or designee's radar screen for a minimum of 15 minutes of live time and return to play will be directed by the physician trained in the evaluation of concussions.



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Post-Concussion Management for Diagnosed Concussions:

All student athletes diagnosed with a concussion are given precautions both verbally and in written form. A roommate, parent, coach, teammate, or other responsible adult is also assigned and given the same instructions.

The concussed student athlete is removed from all activities and put on brain rest for a minimum of 24 hours. No return to classroom activity is permitted on the same day a concussion occurs. An evaluation by a physician occurs as soon as possible. The concussion protocol day 1 begins the next day. Diagnosis of concussion is reported to academic support staff and a letter excusing the student athlete from course work is given to that student athlete's academic advisor to aid in the communication of the student athlete's injury to their professors.

The student athlete reports daily to the medical staff and completes a symptom score. Any new or concerning changes in the athlete's symptoms are then evaluated by a team physician.

Prolonged symptoms or new conditions that could fall under "Post-Concussion Syndrome" are evaluated by the team physician and treated. Complex cases may be referred to our designated sports medicine advisory team neurology consultants for further evaluation and treatment. Those conditions include but are not limited to: sleep dysfunction, emotional lability including anxiety and depression, migraines or other headache disorders, and ocular or vestibular dysfunction.

Nutritional Aspects of Concussion Recovery:

Early feeding should be provided to the student athlete within 24 hours of concussion diagnosis. Feeding should be composed of a minimum of >50% of total energy expenditure containing 1-1.5g/kg protein daily, and continued daily until full replacement is achieved, ideally by day 7 following injury. This intervention is critical to limit the intensity of the inflammatory response and improve outcomes.

All student athletes with a diagnosed concussion should consult with the sports dietitian as soon as reasonably possible following their injury for individualized guidance on energy and nutrient needs taking into account appetite concerns and food access.

Student athletes should use food first to increase dietary omega-3 fatty acids. Routine use of supplements are not recommended at this time.

Return-to-Learn:

Return-to-learn (RTL) is an individualized, stepwise program for successful reintegration into the classroom. As concussion and mild traumatic brain injury are covered under the Americans with Disabilities Act Amendments Act (ADAAA), our program, in working with the campus Disability Resource Center (DRC), is compliant with ADAAA law.

As student athletes return to school after a concussion, it is important to observe for the following: increased problems with attention or concentration, increased problems remembering or learning new information, longer time needed to complete tasks or assignments, difficulty organizing tasks or shifting between tasks, inappropriate or impulsive behavior during class, greater irritability, less ability to cope with stress, more emotionality, fatigue, difficulties in a stimulating environment including physical symptoms such as headache, nausea, or dizziness.

Successful RTL is dependent on several variables, including identification of co-morbid conditions that can delay recovery. It is also important to note that each student athlete will recover at a different rate.

After diagnosis of a concussion, the academic coach will navigate return-to-learn with the student athlete. Most student athletes with concussion recover in 2 weeks and will not require a significant program.

For those student athletes who have delayed recovery, a multidisciplinary team consisting of the team physician, the academic coach or learning specialist, the ASU Disability Resource Center and the faculty representative (if necessary) will help facilitate academic adjustment, accommodation, and modification including an individualized education plan. This team will be supported by a counseling center representative, neuropsychiatric consultant, course instructor(s), coaches, and Dean of Students or other college administrators as needed. While a student athlete is symptomatic, they will continue to be seen at regular intervals by the team physician.

Stepwise progression:



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- 1. Immediate cognitive rest at home, with no return to cognitive work on same day of diagnosis.** Cognitive rest includes resting in a cool, dark room, away from bright lights and loud noises. It also entails the avoidance of potential stressors such as class, reading, computer work, writing papers and also including leisure activities such as driving, playing video games, watching television and texting. Due to the energy crisis that occurs after a concussion, providing both physical and cognitive rest is thought to allow the brain to heal more quickly.
- 2. Trial 10-30 minutes of light cognitive activity.** This may be reading or a math challenge. If the student athlete is unable to tolerate this light cognitive activity, they should stay home or in the residence hall. To move to the next stage the student athlete needs to be able to sustain concentration for 30 minutes without symptom exacerbation and the symptoms need to disappear with cognitive rest breaks.
- 3. Return to partial day of school.** Return to the classroom should include no more than 60 minutes of cognitive activity at one time, followed by at least 15 minutes of rest. Student athletes may attend 1-3 classes per day with interspersed rest breaks. There should be minimal expectations for productivity with no tests or homework. As student athlete status continues to improve, being able to tolerate 4-5 hours of activity with breaks and no increase in symptoms, they may move to the next stage.
- 4. Full day with maximum support.** Student athletes would attend most classes, with 2-3 rest breaks throughout the day of 20-30 minutes. No tests or quizzes. Minimal homework of less than 60 minutes and minimal to moderate expectations for productivity. To move to the next stage they should be able to tolerate increased demands with only 1-2 breaks needed.
- 5. Full day with moderate support.** Student athletes would attend all classes with 1-2 rest breaks throughout the day of 20-30 minutes. May begin quizzes. Moderate homework up to 60-90 minutes and moderate expectations for productivity. At this time a schedule can be established for make-up work.
- 6. Full day with minimal support.** Student athletes would attend all classes with 0-1 rest breaks throughout the day of 20-30 minutes. They may begin modified tests with breaks and extra time. Homework of 90 minutes and maximum expectations for productivity.
- 7. Full day with no support needed.** Student athletes attend their full class schedule with no rest breaks. There are maximum expectations for productivity and begin to address make-up work.

Return to Play:



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All return to play decisions are directed by a team physician.

Student athletes are followed by their daily concussion symptom scores and then determined by the team physician for the timing to begin the stepwise progression for return to play. All return to play should also be in coherence with our "return to learn" protocols.

Once an athlete is at or close to their baseline level of cognition, a graduated stepwise return to play can be initiated, under the supervision of the medical team. Our stepwise approach follows several steps that cover a minimum 5-day time period.

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise with no head impact	Sport specific with no head impact	Add movement
4. Non-contact sport drills with resumption of progressive resistance training	Progression to more complex sport specific training drills with no head impact. May start progressive resistance training	Exercise, coordination and cognitive load
5. Unrestricted (full contact) training	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Unrestricted (full contact) game play		

Adapted from Consensus statement on concussion in sport: the 5th International Conference on Concussion in Sport held in Berlin, 2016

Final Determination of Full Clearance:

1. Final clearance decisions are always made by the team physician.
2. To qualify for clearance, the student athlete must have no increase in symptoms at rest from baseline following physical or cognitive exertion, and must have completed all steps of the return-to-learn and return-to-play progression
3. ImPACT will be administered on a desktop computer in a quiet room free of distractions and cell phones (such as a computer lab) in the presence of an athletic trainer, coach, or other SDA staff. ImPACT score must be back to baseline in all areas with a cognitive efficiency index >0.2. In the event that the ImPACT is invalid, the test may be repeated in a minimum of 24 hours.
4. Student athlete is seen and evaluated by the physician, with full documentation of clearance in the electronic medical record.
5. Athlete's final ImPACT score is set as their new baseline until eligible for repeat baseline testing (every 2 years).

Pac 12 Conference Concussion Initiatives:

Arizona State University currently participates in Pac 12 Conference Concussion initiatives.