



US Soccer Development Academy Concussion Management and Protocol

The following protocol is based on international consensus statements (e.g., CISG Prague, Vienna, Zurich) and is consistent with guidelines from the US Centers for Disease Control.

Concussion Defined (Concussion in Team Sports):

- Concussions are brain injuries.
- Concussions produce complex physiological processes that occur when traumatic biomechanical forces are applied to the brain.
- Concussions may be caused either by a direct blow to the head, face, neck, or elsewhere on the body, which causes an "impulsive" force to be transmitted to the head.
- Loss of consciousness MAY occur but is NOT necessary for concussion.
- Concussion results in a diverse set of clinical signs and symptoms.
- The symptoms of concussion may not appear immediately, it may take hours or days for the symptoms to become apparent.
- Concussions typically are not visible on traditional neuroimaging (CT scans, MRI).
- Neuropsychological or "neurocognitive" tests may be used to detect abnormalities in thinking abilities caused by concussion. However, these tests are only one part of the return to play decision process and ideally should be interpreted by a qualified neuropsychologist.

Signs & Symptoms of Concussion:

Visible Signs (What a coach or observer might see)

- Loss of consciousness/Lying motionless on field
- Slow to get up
- Unsteady gait
- Falling to ground
- Grabbing/Clutching of head
- Dazed/Confused
- Blank or vacant look

Symptoms (What a player reports or is observed during evaluation):

Cognitive: unaware of game specifics (opposition colors, score of game, last play); confusion; amnesia (does not recall events prior to the hit or after the hit); changes in consciousness; not oriented to time, place, or date.

Physical: Headache, dizziness, nausea, unsteadiness/loss of balance, feeling “dinged” or stunned or “dazed,” “having my bell rung,” seeing stars or flashing lights, ringing in the ears, and double vision. Difficulties with sleep may develop later – e.g., trouble falling or staying asleep. Sleeping too much.

Emotional: Depressed mood, sadness, anxiety, irritable, easily frustrated, and heightened emotionality.

What to do if you suspect a concussion has occurred:

- Remove athlete from play immediately
- Player should be evaluated by a healthcare professional, specially trained in the evaluation and management of sports concussion.
- Cognitive and Physical Rest
- Neuropsychological Testing
- Graded Exercise progression
- Return to Play

Remove from play. Any player who is **suspected** of having a concussion should be removed from play and **not** returned to play in the same day.

Evaluation. All players suspected of having a concussion should be evaluated by a healthcare professional who is specifically trained in the evaluation and management of sports concussion. Having obtained a medical or other healthcare degree does not, by itself, indicate that the professional is adequately trained for the evaluation of concussion. The player should not return to play until the healthcare provider has provided written clearance for return to play.

Cognitive and Physical Rest. Following concussion the brain expends much of its energy on trying to recover. Activities that divert the brain’s energy will likely prolong symptom resolution. Both physical and cognitive rest are imperative for recovery. The athlete should avoid all types of physical activity including running, jumping, bike riding, etc. Athletes should avoid cognitively taxing activities such as reading, computer use, video games, extended TV watching, excessive texting, etc. It may be necessary for some athletes to take one or more days off from school to allow themselves to recover.

Neuropsychological Testing. The use neuropsychological or “neurocognitive” tests has become widespread in the evaluation and management of concussion. These tests measure “thinking” abilities such as learning, memory, problem solving, information processing speed and reaction time, which are often - but not always - affected by concussion. All players in the US Soccer Development Academy will have baseline testing (ImPACT) completed at the start of the season. The test is then repeated after a concussion and the results are compared to the baseline test. The tests have shown to be useful in assessing the effects of concussion even if a baseline test is not available. An appropriately trained neuropsychologist is in the best position to interpret the results of these tests.

Graded Exercise progression. Once a player has been symptom free for a minimum of 24 hours, a graded exercise program can be initiated under the guidance of an appropriately trained healthcare professional. The key steps to such a progression are:

1. Light aerobic exercise (e.g. stationary bicycle) for 15-20 minutes (do not allow player to break a sweat).
2. Moderate intensity aerobic exercise (30 minutes, moderate intensity, breaking a sweat).
3. Sport-specific training (ball handling, passing, light running, NO heading).
4. Non-contact training drills, including full exertion interval training (may start light resistance training).
5. Begin Heading Training (steps 1 & 2 below)
6. Full contact training with heading steps 3 & 4
7. Return to competition (game play).

Typically a player progresses from one step to the next every 24 hours as long as they remain symptom free. If the player develops symptoms during one of the steps the activity should be stopped and the player should be allowed to rest for 24 hours or until symptom free, whichever is later. The player should then return to the prior step and resume the progression.

Patience is key as symptoms may re-emerge during this process. Do not attempt to speed up this process unless under the supervision of a well qualified concussion specialist who has access to a multi-disciplinary team of qualified healthcare professionals.

Heading Training (Modified from Johnston, et al., 2004)

1. Partner and player inside 6-yd box. Partner tosses ball softly to player; controlled, straight header, within box, perfect technique (ball off forehead, eyes open, mouth closed, and neck rigid). Five tosses straight ahead, then five to the left, and five to the right. If no symptoms occur then proceed to step 2 the NEXT DAY.
2. Repeat step 1 to start. After an active rest period (run, ball work with feet), partner and player within 18yd box. Partner tosses ball (longer distance, slightly harder), player does controlled header with perfect technique within box. Five each straight, left, right. If no symptoms occur then proceed to step 3 the NEXT DAY.
3. Same as Step 2 with Partner and Player outside 18yd box (longer distance, harder throw). If player remains sx-free then move to step 4 the following day.
4. Full practice with more dynamic, unpredictable heading.

Return to Play. Return to full contact play only occurs after (1) player is symptom free at rest, (2) player remains symptom free after graded exercise progression and heading training, and (3) the player is judged to be at his or her neurocognitive baseline. At this point the appropriately trained healthcare professional should provide a written note clearing the player for full-contact play.