# US Soccer National Teams
# Concussion Evaluation and Management Protocols

The Return To Play (RTP) decision-making process is complex and dynamic. Despite ongoing research, the RTP decision remains one of the most complicated in sports medicine and largely a clinical endeavor without firm empirically derived guidelines. The weight of clinical and empirical evidence suggests that the RTP decision-making process should be individualized rather than relying on generic RTP guidelines. Of significance is our current understanding from the research literature that the signs and symptoms of concussion are dynamic and evolve over time. Consequently, symptoms may not be present until minutes or hours following the initial blow(s).

**Concussion Defined (Concussion in Sport Group, 2017):** Consensus statement on concussion in sport–the 5th international conference on concussion in sport held in Berlin, October 2016 British Journal of Sports Medicine April, 2017.

Sport related concussion is a traumatic brain injury induced by biomechanical forces. Several common features that may be utilized in clinically defining the nature of a concussive head injury include:

- SRC 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.
- SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours.
- SRC may result in neuropathological changes, but the acute clinical signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.
- SRC results in a range of clinical signs and symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged.

The clinical signs and symptoms cannot be explained by drug, alcohol, or medication use, other injuries (such as cervical injuries, peripheral vestibular dysfunction, etc) or other comorbidities (eg, psychological factors or coexisting medical conditions)

## Early Signs & Symptoms of Concussion:

***Cognitive*** features: Unaware of game specifics (opposition colors, score of game, last play); confusion; feeling "dinged", "having my bell rung", dazed or stunned; memory disturbance, decreased information processing speed; amnesia (does not recall events prior to the hit or after the hit); alteration in consciousness; not oriented to time, place, or date.

***Physical*** symptoms: Headache, dizziness, nausea, unsteadiness/loss of balance, sensitivity to light/noise, and other visual changes such as seeing spots and blured vision.

***Sleep*** disturbance: fatigue

***Mood*** disturbance: psychological disturbance (e.g. depression/anxiety/irritability/emotional stability).

## Baseline Testing

- ImPACT has been chosen as the baseline instrument for all national teams.
- All NEW players to national teams will be baseline tested by Athletic Trainer (AT) once rostered to the team.
- AT is to determine whether any new, incoming players have been baseline tested within the US Soccer database. If the player has not been tested then a new ImPACT baseline will be administered prior to the player engaging in any contact play.
- If the player believes that he has been tested by an MLS club, contact Dr. Echemendia who can determine whether a baseline evaluation was conducted and he will transfer the data as appropriate.

## Acute Evaluation/Management

Players who are suspected of having sustained a concussion shall be removed from play immediately and evaluated by team medical staff. The evaluation shall consist of a standardized acute concussion evaluation using the SCAT5.

If after initial evaluation the player is diagnosed with a concussion he or she shall not be returned to play on the same day. A player does not need to have lost consciousness to have suffered a concussion.

An email should be sent to U.S. Soccer's medical staff advising that a concussion has been diagnosed. Please include the clinical details of the injury and send to:
Dr. George Chiampas – Chief Medical Officer (gchiampas@ussoccer.org)
Lea Thomann – Senior Manager, Sports Medicine (lthomann@ussoccer.org)
Dr. Ruben Echemendia – Consulting neuropsychologist Mens Youth and Senior National Teams (rechemendia@comcast.net)
Dr. Elizabeth Pieroth – Consulting neuropsychologist for Womens Youth and Senior National Teams Pieroth, (EPieroth@northshore.org)

## Post-Acute Evaluation and Management

After a brief period of rest during the acute phase (24–48 hours) after injury, patients can be encouraged to become gradually and progressively more active while staying below their cognitive and physical symptom-exacerbation thresholds (i.e.: activity level should not bring on or worsen their symptoms).

The player will be referred to a consulting neuropsychologist for a standardized neuropsychological evaluation that will consist of an interview, ImPACT and the US Soccer Neuropsychological Test Battery. The Consulting Neuropsychologist will communicate the results of the evaluation to the Team Physician who is ultimately responsible for making the RTP decision using the guidelines contained herein. The US Soccer consulting Neuropsychologist functions in a consulting capacity to both the team and US Soccer. He/she functions under the directive of US Soccer.

At those times when an injury occurs outside of North American or in an area where a consulting neuropsychologist cannot be accessed, the team AT should contact US Soccer medical staff and Dr. Echemendia or Dr. Pieroth to discuss the situation. At this time the AT may administer a post-injury ImPACT test and contact Dr. Echemendia or Dr. Pieroth for post-injury consultation/interpretation. Please note that a post-injury ImPACT should not be administered without first having contacted Dr. Echemendia or Dr. Pieroth.

After a brief period of physical and cognitive rest (as noted above) players may be exposed to gradual and progressively more challenging activity while remaining below their cognitive and physical threshold for concussion-related symptoms. An example of this progression may include light aerobic workout, followed by more intense aerobic workouts, strength training, non-contact sport-specific drills, contact sport-

specific drills, heading training and finally, full return to play. Typically, progression to the next level of exertion occurs if the player remains below their symptom threshold for 24 hours (time frame may be lessened or lengthened dependent on individual player symptoms and history). If concussion-related symptoms re-emerge, the player should begin with the previous step after being symptom free for 24 hours. Player should only progress to the next level when instructed to do so by the team AT or the Team Physician.

In accordance with current consensus guidelines, there is no mandatory period of time that a player must be withheld from play following a concussion. However, at minimum, a player MUST be free of concussion-related symptoms at rest and upon exertion, and determined to be neurocognitively at baseline. Players under the age of 18 shall be managed more conservatively than older players. **At no time shall a player under the age of 18 be returned to play sooner than 7 days after becoming symptom free.**