# MLS Game Day Concussion Checklist

**PLAYER STRUCK IN HEAD/BODY** +

Player demonstrates or reports symptoms or signs of a concussion

*OR*

Team Athletic Trainer or Medical Doctor, Venue Medical Director, referee, coach or teammate initiates Game Day Protocol

*OR*

Spotter* reports to Venue Medical Director, who initiates Game Day Protocol

This MLS Game Day Checklist describes the MLS protocol/process for assessing a player with a potential/possible head injury.

## On-Field/Sideline Evaluation

Players undergo the 'on-field/sideline' evaluation. Goalkeepers may be evaluated on the field with play stopped.

- ☐ **Airway, breathing, circulation / Glasgow coma scale**
- ☐ **Observable Signs**
- ☐ **History of Event**
- ☐ **Maddock's**
- ☐ **Orientation**
- ☐ **Select Symptoms**
  - ☐ Headache/Head pressure
  - ☐ Dizziness
  - ☐ Nausea
  - ☐ Fogginess/Out of it/Not right
  - ☐ Sensitivity to light/noise
  - ☐ Blurry vision
- ☐ **Focused Neuro Exam**
  - ☐ Cervical spine exam
  - ☐ Evaluation of speech
  - ☐ Gait observation
  - ☐ Pupil exam and eye movements
- ☐ **Exertional Challenge**
- ☐ **Review of Video (unless not available)**

☐ **Mandatory Observable Signs**

1. Lying motionless
2. Motor incoordination
3. Impact seizure
4. Tonic posturing
5. No protective action-floppy
6. Blank/vacant look

**Mandatory Observable Signs trigger an automatic off-field / locker room evaluation, unless alternative explanations are present.**

## Off-Field/ Locker Room Evaluation

**If after an on-field assessment, symptoms are present, no alternative explanation for the sign is present or suspicion of concussion continues, an off-field/locker room evaluation must occur.**

- ☐ MLS SCAT-5
- ☐ Full Neurological Exam

## If concussion diagnosed or suspicion continues, player does not return to play

## Player diagnosed with concussion initiates MLS Concussion Management Protocol

## RETURN TO PLAY CLEARANCE

The player may re-enter the game only if:

The full checklist has been completed and any additional examination components of the evaluation are determined to be normal

***AND***

The Venue Medical Director reviews video footage of the incident provided by the Medical Spotter and deems the player safe to return to play.

**AND**

The Venue Medical Director and Team Physician, if present, are in agreement that the player is safe to return to play.

**Players that return to play should be serially monitored during the game & re-assessed again at a minimum 24-48 hours to assess for concussion.**

*Team Athletic Trainer or Medical Doctor or Venue Medical Director can also request clips from spotter if any concern for potential injury.

This protocol, which is updated from time to time, is expressly designed for Major League Soccer and should not be extrapolated for use beyond the Major League Soccer population. Updated 11/8/21

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## I. Head Injury/Concussion Evaluation and Management Protocol (MLS Policy 403; CBA Exhibit 12)

The identification and treatment of head injury, including concussion, in professional soccer is an important component of MLS medical operations. The MLS Head Injury/Concussion and Evaluation and Management Protocol ("The Concussion Protocol") sets forth an empirically based and medically sound approach towards the education, diagnosis, recognition, evaluation, and management of these injuries.

All medical providers and Club Medical Staff shall adhere to the Concussion Protocol, which has been approved by MLS and the MLSPA following its development by the MLS Concussion Program Committee, which is a multidisciplinary medical and administrative group, including representation from the MLSPA, charged with reviewing, and updating the Concussion Protocol on an annual basis.

The objective of this Concussion Protocol is to establish a standardized program that follows the international Concussion in Sport Group (CISG) consensus guidelines for the evaluation and management of sport-related concussion.

**Education:**

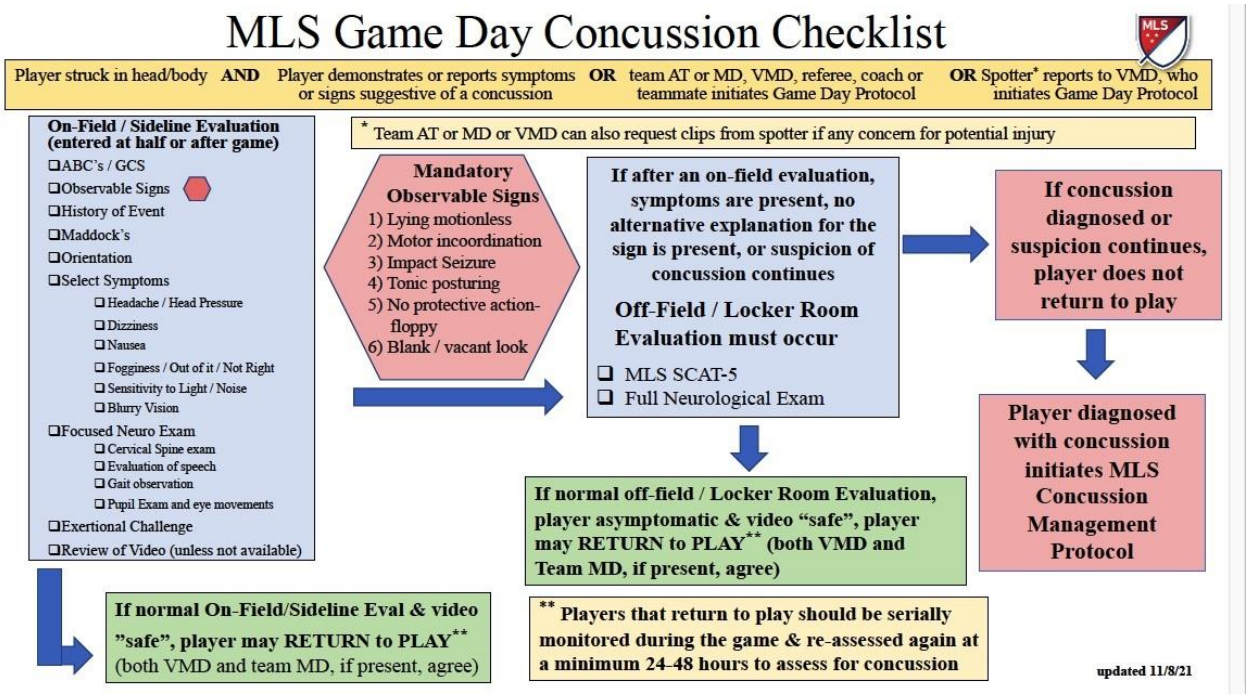
Education plays a critical role in concussion identification and management. All Players, Chief Soccer Officers, technical staff, and Club Medical Staff are required to view an educational video each pre-season as part of the entrance exam for Players, or within one week of joining a Club if individuals are not part of the Club during the pre-season. The video is reviewed on an annual basis by the MLS Concussion Program Committee and updated as needed to reflect changes in scientific evidence and consensus standards in the practice of concussion care.

Concussion education posters are placed in all Club locker rooms (home and visiting) highlighting the mechanisms of injury, symptoms, and natural history of concussion as well as the importance of prompt reporting to Club Medical Staff if a Player suspects that he or a teammate may have a concussion. (See the MLS Operations Manual for locker room standardization.)

A yearly education program for officials is provided by MLS medical representatives, which includes viewing the educational video, and also highlights the observable signs and symptoms of possible head injury as well as the important role that officials play in the recognition of a possible head injury. Officials are instructed to call the Club Medical Staff onto the field immediately if there is any suspicion of a head injury. Officials can also aid in clearing the space around an injured player to allow the Club Medical Staff to have unobstructed access to evaluate the injured player(s) on the field of play, and to prevent players from touching or moving a player with a suspected head injury.

"On-Field" assessment cards are provided to Club Medical Staff to assist in standardizing the on-field assessment of Players with possible head injury. These cards represent the minimum on-field evaluation that must be performed, understanding that each assessment might incorporate additional examination components based on the clinical situation.

The Game Day Checklist presented below depicts the medical decision-making process for on-field, off-field, removal, and return to play for Players regarding possible concussions and concussion-like symptoms during games. The Game Day Checklist follows the guidelines presented by the CISG (McCrory et al., 2017).




**Concussion Defined:**

The diagnosis of concussion is a complex process that is primarily clinical in nature. Determining when the Player is ready to start the Return to Play (RTP) progression and the timeline for this progression follows international guidelines (McCrory et al., 2017) under the direction of the Club CMO (or his/her Club Physician designee), and should be individualized based on player history, symptoms, examination, and recovery patterns.

The MLS Concussion Protocol incorporates the definition of "concussion" set forth by the CISG (McCrory et al., 2017) as follows:

> *"Sport related concussion (SRC) is a traumatic brain injury induced by biomechanical forces. Several common features that may be utilized (sic) 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 co-morbidities (e.g., psychological factors or coexisting medical conditions)."*

**Recognition of Concussion:**

Recognition of possible concussion is a multifaceted process that involves Club Medical Staffs, officials, the League Spotter (see below), Club personnel, and the Players themselves. The following **Mandatory Observable Signs** of possible concussion indicate a high likelihood of a diagnosis of concussion following a direct or indirect blow to the head (Davis et al., 2019):

i. **Lying Motionless**: The Player is lying motionless on the playing surface. The Player does not appear to move or react purposefully, respond, or reply appropriately to the game situation (including teammates, opponents, referees, or Medical Staff).
ii. **Motor Incoordination**: The Player appears unsteady on his feet (including losing balance, staggering/stumbling, struggling to get up, falling) or in the upper limbs (including fumbling). May occur in rising from the playing surface or in the motion of walking/running.
iii. **Impact Seizure**: The Player exhibits involuntary clonic movements that comprise periods of asymmetric and irregular rhythmic jerking of axial or limb muscles.
iv. **Tonic Posturing**: The Player exhibits involuntary sustained contraction of one or more limbs (typically upper limbs), so that the limb is held stiff despite the influence of gravity or the position of the Player. The tonic posturing could involve other muscles such as the cervical, axial, and lower limb muscles. Tonic posturing may be observed while the Player is on the playing surface or in the motion of falling, where the player may also demonstrate no protective action.
v. **No Protective Action** – **Floppy**: The Player falls to the playing surface in an unprotected manner (i.e., without stretching out hands or arms to lessen or minimize the fall) after direct or indirect contact to the head. The Player demonstrates loss of motor tone (which may be observed in the limbs and/or neck) before landing on the playing surface.
vi. **Blank / Vacant Look**: The Player exhibits no or blunted facial expression or apparent emotion in response to the environment (may include a lack of focus/attention of vision). Blank/ vacant look is best appreciated in reference to the athlete's normal or expected facial expression.

**Mandatory Observable Signs Evaluation**

If following a direct or indirect blow to the head the Player exhibits any of the six (6) signs enumerated above, it is mandatory that he shall be first evaluated on-field using the "on-field" assessment (described below). If, after the on-field assessment, the Player has any concussion-related symptoms, no alternative explanation for the sign is present, or there is continued suspicion of SRC, the Player shall then undergo an off-field evaluation, including the full MLS modified SCAT5, in a distraction-free environment. If, after the on-field assessment, the Mandatory sign was deemed to be due to non-head injury related cause, the alternative reason for the sign must be documented and the Player does not require an off-field evaluation.

There are other observable signs that have been identified in the scientific literature that occur on a frequent basis in soccer but do not have the predictive ability in the diagnosis of concussion. These signs are referred to as **Discretionary Signs**. If these signs are observed MLS Medical Staff may determine at their discretion whether an evaluation is warranted. The Discretionary Signs include:

i. **Slow to Get Up**: The Player takes longer than usual to rise to both feet after falling to the ground following a direct or indirect hit to the head.
ii. **Clutching of Head**: The Player grabs his head/face with one or both hands following a hit to the head. The clutching must be immediate, sustained, and related to the blow.
iii. **Falling to Ground**: The Player falls to the ground either onto his knees or lying prone on the playing surface following a direct or indirect hit to the head.
iv. **Bleeding from head/mouth/nose**: The appearance of blood coming from the head, face, lip, mouth, nose, or in the hair following a hit to the head.

Other signs and symptoms of concussion that may emerge minutes to hours after the suspected injury include the following:

**Select Signs & Symptoms of Possible Concussion**:

| PHYSICAL | COGNITIVE | EMOTIONAL | SLEEP |
|---|---|---|---|
| Headache | Feeling like in a fog | Nervous or Anxious | Drowsiness |
| Pressure in head | Feeling slowed down | More emotional | Trouble falling asleep |
| Nausea or vomiting | Don't feel right | Irritability | |
| Dizziness | Difficulty concentrating | Sadness | |
| Blurred vision | Difficulty remembering | | |
| Balance problems | Confusion | | |
| Sensitivity to light | | | |
| Sensitivity to noise | | | |
| Neck Pain | | | |
| Fatigue or low energy | | | |

Understanding that concussion symptoms or signs may not always be present within the first few hours of an inciting impact, any Player who is evaluated during a game with an "on-field" assessment and/or MLS Modified SCAT5 (as discussed more fully below) that is not initially diagnosed with a concussion shall be evaluated again serially, and also at a minimum 24-48 hours after the initial suspicion of injury.

**MLS Medical Spotter Program (Recognition Game Day):**

Head injuries in soccer often occur at high speeds and sometimes with obstructed line of sight for Club Medical Staff. MLS has implemented programs during games to provide the VMD and Club Medical Staff with technological assistance in early detection of the injury.

The League Spotter role is for a designated observer who is a medical professional trained by the League and tasked with providing an "extra set of eyes" for the VMD / Club Medical Staff. The League Spotter must review live video feeds (with rewind capabilities) to observe for any Concussion Protocol-enumerated **Mandatory or Discretionary Observable Signs** of possible concussion. If a sign is observed, the League Spotter must relay the information to VMD along with a video clip of the incident. The role of the League Spotter is to aid in the identification of a possible head injury, not to diagnose a concussion. League Spotters are not authorized to stop the game or remove a Player from play for evaluation.

When contact occurs that leads to suspicion that a head injury may have occurred, the video feed shall be "clipped" by the League Spotter and sent to the VMD who can view the feed on an iPad or monitor that is kept at the 4th official's table during the match. The VMD will share the video feed with Club Medical Staff as indicated (VMD Policy 402). If any of the **Mandatory Observable Signs** are identified by the League Spotter, he or she will communicate immediately to the VMD that the Player should be evaluated as per the Concussion Protocol. In these situations, the VMD must review the video (unless it is not available) prior to allowing the Player to return to play.

**On-Field Assessment:**

Players who are suspected of having sustained a concussion must be evaluated immediately on the field of play by Club Medical Staff. The evaluation must include, at minimum, the components of the "On-Field" assessment of the MLS Modified SCAT5, including the "ABCs" (Airway, Breathing, Circulation), Maddocks Questions, Glasgow Coma Scale, Cervical Spine Assessment, and MLS On-field Symptom list.

Following completion of the on-field components noted above, the Player shall undergo a brief exertion challenge off the field along the touchline. The specific components of the exertional challenge will be left to the discretion of the Club Medical Staff and VMD who are familiar with the Player's medical history but should contain aerobic elements to increase heart rate (e.g., sprints along the touchline, quick acceleration/deceleration cycles) and challenge the vestibular system (e.g., quick lateral, rotational, and/or vertical movements of the head while sprinting, quickly cutting, and changing directions).

If, after this assessment, either the Club Medical Staff, VMD, or Club Physician determines that a more complete off-field evaluation is needed, including the MLS Modified SCAT5, such an evaluation must be performed off-field in a distraction-free environment. For a Player to return to competition following such evaluation, the VMD must determine that the Player is safe to return to play but shall not return a player if the Club Athletic Trainer/Therapist or other Club Physician has already disqualified or removed the Player. As described above, if any Mandatory Observable Sign is observed along with a mechanism of injury by the spotter, the VMD must perform an off-field evaluation unless there is a non-head injury cause identified and documented for the Mandatory Observable Sign. For a visiting Club Player, the VMD and visiting physician, if present, must agree that the Player is safe to return to play. This decision should occur after discussion with the League Spotter and review of the video clips (unless not available).

**Off field Evaluation & Diagnosis of Concussion:**

If a Player is diagnosed with a concussion using the previously enumerated criteria, or the suspicion of a concussion remains after the "on-field" assessment has been completed, the Player must be removed from play and evaluated by Club Medical Staff using, at minimum, a clinical evaluation, including examination of neurological functioning and the MLS Modified SCAT5 in a distraction-free environment (see Game Day Checklist). The off-field evaluation includes the MLS Modified SCAT5, and incorporates the full SCAT5 symptom checklist, cognitive testing including the Standardized Assessment of Concussion using a 10-word list, Concentration, Neurological Screen, Balance assessment and Delayed 10-word recall. The off-field evaluation also includes additional clinical measures as indicated determined by the VMD/Club medical staff. The diagnosis of a concussion is a clinical judgment, made by a medical professional. The SCAT5 should NOT be used by itself to make, or exclude, the diagnosis of concussion. An athlete may have a concussion even if their SCAT5 is "normal".

The Club Physician and/or VMD have the sole responsibility of making a concussion diagnosis, understanding that the MLS Modified SCAT5 may be "normal" in a Player that has a concussion. Any Player diagnosed with concussion shall not return to play and will enter the management component of the Protocol. If during the medical examination it is determined that the player cannot complete the MLS Modified SCAT5 (e.g., Player is unstable or too symptomatic to undergo testing), the Player shall not be allowed to return to play and the MLS Modified SCAT5 shall be completed as soon as clinically feasible.

**Medical Management:**

Management of concussion begins with an initial brief period (e.g., 24-48 hours) of relative cognitive and physical rest. The Player should be evaluated by the Club CMO (or his/her Club Physician designee), who will provide individualized recommendations regarding initial management. Given the evolving nature of concussion, the RTP exertional progression should not begin (beyond activities of daily living) for approximately 24 hours post injury.

As the Player's symptoms improve, day-to-day activities may be gradually increased under the guidance of the Club CMO (or his/her Club Physician designee) so long as the introduction of activities does not elicit new concussion-related symptoms or cause significant exacerbation of existing concussion-related symptoms (e.g., introducing walking, reading, computer use). The progression through the graded RTP process shall be under the direction of the Club CMO (or his/her Club Physician designee). At all times, the Player shall be monitored for a re-emergence or exacerbation of concussion-related symptoms, which

would lead to a pause in the progression and subsequent resumption of activity as tolerated. Players should be evaluated on a daily or near-daily basis by the Athletic Training/Therapy staff and on a weekly basis by the Club CMO (or his/her Club Physician designee) recognizing that travel and holiday considerations may make this difficult. It may be useful to serially monitor the symptoms post-diagnosis using MLS Modified SCAT5. Club Medical Staff are responsible for reviewing the Player's progress, any challenges that emerge, as well as communicating that progress with the Club Neuropsychologist and other Medical and Coaching Staff members (e.g., Head Athletic Trainer/Therapist, Head Strength & Conditioning Specialist, Head Coach, CSO).

Prior to return to contact play, the Player must be evaluated by the Club Neuropsychologist and have the MLS neuropsychological test battery performed (and interpreted). The Club CMO (or his/her Club Physician designee) may request consultation with the Club Neuropsychologist at any time. However, a Player must undergo the complete MLS neuropsychological test battery by the Club Neuropsychologist prior to return to unrestricted play (prior to full contact training with heading). If a neuropsychological evaluation is requested early in the recovery process (i.e., within the first 72 hours) the Player must undergo another full neuropsychological evaluation after completion of the exertional protocol and prior to clearance for unrestricted play.

In accordance with current consensus guidelines, there is no mandatory period of time that a Player must be withheld from full participation following the onset of a concussion. However, at minimum, a Player MUST be free of concussion-related symptoms at rest and at levels of exertion consistent with competitive play and determined to be at his pre-injury neurocognitive and neurological baseline. Taking these conditions into account, the precise timing of return to full participation is determined by the Club's CMO, in consultation with physicians and other medical staff managing the Player's care.

**Graded Return to Participation Example:**

1. Rest (cognitive and physical)
2. Light aerobic exercise (e.g., stationary bicycle)
3. Moderate intensity aerobic exercise
4. Sport-specific training (ball handling, passing, light running, NO HEADING)
5. Non-contact training drills, including full exertion interval training (may start resistance training and modified heading)
6. Full contact training with heading
7. Return to competition (game play)

Progression from one level to the next is executed by Club Medical Staff under the sole guidance and direction of the Club CMO (or his/her Club Physician designee). If symptoms re-emerge or are exacerbated at any level, the Player should stop the activity and begin with the previous step after returning to his baseline symptoms (if any).

**Neuropsychological Protocol:**

All Players in MLS shall undergo baseline neuropsychological testing prior to engaging in any contact play. Typically, this testing occurs prior to the start of the season. The baseline evaluation consists of computerized neuropsychological testing using ImPACT administered by the Club neuropsychologist via MLS's unique portal and the MLS Modified SCAT5 administered via the HeadCheck Health App. Players who have three (3) valid prior ImPACT baselines will only need to be tested every three (3) years

thereafter with ImPACT, assuming no concussions during that period. The SCAT5 will be administered on a yearly basis.

As noted above, all Players diagnosed with a concussion shall be referred to the Club's Neuropsychologist for a post-concussion evaluation **prior to return to contact play**. The evaluation, and the timing of such evaluation, within the RTP progression is under the authority of the Club CMO (or his/her Club Physician designee) and takes into consideration the Player's history, recovery, and the specific purpose for the neuropsychological evaluation, if other than to aid in the RTP decision. The pre-clearance neuropsychological evaluation shall consist of a clinical interview and the MLS Neuropsychological Test Battery (ImPACT and Paper & Pencil tests). At those times when the Club is on the road, the opposing Club Neuropsychologist should be notified to conduct the evaluation and administer the post-injury test battery. The test data must then be electronically transferred to the home Club Neuropsychologist for interpretation and consultation with the home Club CMO (or his/her Club Physician designee).

Players who undergo post-injury neuropsychological assessment shall be re-evaluated by the Club's Neuropsychologist at the start of the next season with ImPACT and Paper & Pencil tests to recalibrate the baseline, since the original baseline may no longer be valid.

**Neuropsychologist Communication with Club:**

Baseline test data may not be shared with Club personnel unless a concussion has been diagnosed, and baseline scores are being compared to post-injury scores.

If a Player is evaluated post-injury, the results of the evaluation shall be communicated to Club Medical Staff both verbally and in writing via a brief (one to two paragraphs) written report. The focus of the report shall be a description of Player symptoms (if any), mechanism of injury, concussion history, and a determination of whether the Player appears to have reached his neurocognitive baseline.

The Club Neuropsychologist, upon request by the Player, may provide interpretation of the test results to the Player with the understanding that the RTP decision is made by the Club CMO (or his/her Club Physician designee) and not by the Club Neuropsychologist, Club Athletic Trainers/Therapists, or any other Club Medical Staff member or consultant. If a Club Neuropsychologist advises the Club CMO (or his/her Club Physician designee) that a Player has not reached baseline levels of functioning and the Club CMO (or his/her Club Physician designee) makes the decision to return the Player to play despite being notified of this limitation, the League Medical Office and League Neuropsychologist must be notified immediately in writing.

Post Injury, the neuropsychological test battery information and the Club Neuropsychologist's written report should be uploaded to the League's EMR system under the injured player's medical record. At no time should baseline neuropsychological data be uploaded to a Player's EMR system file unless accompanied by an interpretive report written by the Club Neuropsychologist.

**Club CMO Authority:**

The Club CMO has the ultimate and absolute authority to decide when a Player is fit to return to play following the diagnosis of a concussion and related medical management. This determination cannot be made by anyone other than the Club CMO (or his/her Club Physician designee). The Club CMO's authority in this regard shall not be challenged by Club coaching or administrative staff.

**References:**

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