



ASSESSMENT & MANAGEMENT OF CONCUSSION IN SOCCER

SUGGESTED RETURN TO PITCH PROTOCOL*

STAGE	AIM	ACTIVITY
1	Symptom limited	Daily activities that do not provoke symptoms (e.g., walking or light stationary bike)
2	Light aerobic exercise	<p>a. Cardiovascular: Controlled activities of low to moderate intensity on stationary bike (25-40min) including warmup and cool-down</p> <p>b. Body training: Mobility/stretching and balance exercises</p>
3	Soccer specific (non-contact)	<p>a. Cardiovascular: On field training with 10min warmup at moderate intensity with variable running tasks; Interval runs at higher intensity with sufficient rest; 5-10min cool down</p> <p>b. Technical training: 1:1 technical training with the ball; balance and passing; short/long passing; easy shooting on targets</p> <p>c. Body training: No resistance progressing to elastic resistance, mobility and stretching exercises, trunk strength/stabilization exercises (no resistance or explosive movements), basic lower/upper extremity strength exercises (elastic resistance), balance exercises (double and single stance) on unstable surfaces</p> <p>No heavy resistance training or contact activities Goalkeepers: controlled diving activities (not explosive) on foam surface in gym and without a ball</p>
4a	Non-contact soccer training drills	<p>a. Cardiovascular: On field training with 10min warm up at moderate intensity with straight running, direction changes, lateral shuffles, forward/backward and zig-zag running, interval runs at high intensity up to 90%max HR, 5-10min cool down</p> <p>b. Technical training: non-contact with small group of players, small size game, short/long passing, goal/target shooting, plant/cut and dribble with ball, basics: easy soft ball heading with increasing complexity (add balance component) in a controlled setting and limited quantity</p> <p>c. Body training: Elastic resistance, mobility and stretching exercises, trunk strength/stabilization exercises (progressing to free weights), basic lower/upper extremity strength exercises (elastic resistance progressing to free weights), balance exercises (single/double stance) on unstable surfaces</p> <p>d. Strength training: <80%1 RM, no classic weight lifting or exercises with head below the hips (e.g. back extensions on the bench), progressively increase external resistance for multi-joint exercise</p> <p>No contact activities Goalkeepers: controlled diving activities with and without a ball (shots from short/medium range, 1:1 with coach)</p>
4b	Controlled contact soccer training drills	<p>Following medical clearance, controlled contact activities that simulate controlled contact situations (e.g., headers, checks, tackles), progressive increase in intensity, progressing from player with one partner (e.g. medical personnel) to training with small groups, progressing from small playing field (1/3, 1/2) to full field, limited number of headers with regular ball in controlled settings (e.g., thrown ball, heading without opponent)</p> <p>Goalkeepers: controlled diving drills on grass without and with ball catching (shots from short/medium/long range; 1:1 with coach)</p>
5	Full contact team soccer training	<p>Following medical clearance, normal team training participation; Continue</p> <p>c. Cardiovascular training continues</p> <p>d. Body training: Return to routine strength training (unrestricted)</p> <p>e. Assess and assure psychological readiness</p>
6	Return to Soccer	Normal game play

* Feddermann-Demont N, Chiampas G, Cowie CM, Meyer T, Nordström A, Putukian M, Straumann D, Kramer E, Initial examination, differential diagnosis and management of head injuries in high-level football, British Journal of Sports Medicine (in review)



SUGGESTED RETURN TO SCHOOL PROTOCOL†

STAGE	AIM	ACTIVITY
1	Daily activities at home that do not provoke symptoms	Typical activities of the child during the day as long as they do not increase symptoms (e.g., reading, texting, screen time). Start with 5–15 min at a time and gradually increase
2	School activities	Homework, reading or other cognitive activities outside of the classroom
3	Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with breaks during the day
4	Return to school full-time	Gradually progress school activities until a full day can be tolerated

SPECIALISTS

Although the natural history of concussion is not well defined among a number of cohorts, spontaneous injury resolution and full return to play can be anticipated among half of concussed athletes within 14 days in young adults and 28 days in children. International guidelines suggest that young adults experiencing concussion related symptoms beyond 14 days (or > 1 month among children) should be referred to a qualified health care provider at the behest of the coordinating physician, based on the clinical presentation. Specific interventions will need to be made on a case-by-case basis, but exercise²¹, visual or vestibular rehabilitation²², cervical spine therapy²², and cognitive behavioral therapy²³ may all have benefits.

DOCUMENTATION

Athletic trainers, team physicians, and other health care providers should maintain accurate, complete, and legible documentation to help ensure the health and safety of the athlete throughout the course of care, beginning before and continuing after injury, through recovery and return to full activity. Indeed, sports medicine clinicians should document all of their interactions, clinical recommendations, and findings starting with the pre-injury evaluation.

While documentation is standard practice among medical providers, the National Athletic Trainers’ Association¹⁵ has advised that clinicians document “all pertinent information surrounding the concussive injury.” This includes (1) mechanism of injury, (2) initial signs and symptoms, (3) state of consciousness, (4)



findings on serial testing of symptoms and neuropsychological function and postural-stability tests, (5) instructions given to the athlete and/or parent, (6) recommendations provided by the physician, (7) date and time of the athlete’s return to participation, and (8) relevant information on the player’s history of prior concussion and associated recovery pattern(s).

Thus, for example, during an athlete’s return-to-play progression, daily, accurate, and detailed documentation surrounding the athlete’s progression through the protocol is recommended. Understanding that field restrictions might limit the ability to document right away when an athlete is first evaluated, most documentation may happen afterwards. However, it is important that the documentation accurately reflect all perceived signs and symptoms in order to help the athlete progress along the recovery process. The medical notes should document the dates on which the testing was performed, supervision of the testing, and the specific maneuvers performed. While this level of attention to detail may be viewed as laborious or challenging to achieve, such documentation is helpful in the event any questions arise regarding the care provided.

†adapted from McCrory et al²