BCS CONCUSSION MANAGEMENT PROTOCOL

A concussion is a disturbance in the function of the brain caused by a direct or indirect force to the head. It results in a variety of symptoms and may, or may not, involve memory problems or loss of consciousness. There is a wide variability in the symptoms of concussion that an athlete can experience. Therefore, each athlete should be treated on a case-by-case basis by medical personnel who are trained in diagnosis and management of sport-related concussion. This document provides a protocol for concussion management.

1. Preseason Baseline Assessment

Prior to any sliding training and competition, all athletes must undergo:

- Pre-season medical assessment which includes review of past concussion history (including any instances of loss of consciousness, memory problems, length of time of recovery, etc.)
- Baseline neuropsychological testing utilizing a web-based system (ImPACT)
- Baseline KINARM sensorimotor robotic testing
- Baseline Sport Concussion Assessment Tool (SCAT3)

A BCS team physician must conduct the pre-season medical assessment, oversee the neuropsychological and KINARM robotic testing with the team therapists, and determine if the athlete is cleared to slide.

2. Injury Protocol

A BCS team physician, chiropractor or physiotherapist (hereafter, BCS medical team) should be onsite during sliding training and competition. This individual must be trained in assessment and management of acute concussion.

In the event of a crash or a hit to the head:

- The athlete must report to the BCS medical team for assessment.
- The BCS medical team should also seek out the athlete.
- Coaches should report any suspicion of a concussion to the BCS medical team.
- In the event that the concussion is assessed by the BCS team chiropractor or physiotherapist, the BCS team physician should also be notified to assist with management.
- In the event that no members of the BCS medical team are available, the athlete must be assessed by a physician as soon as a concussion is suspected. Athletes with a suspected concussion should be escorted by a team-mate, coach, etc. to a physician. Subsequent follow-up should then be arranged with the BCS team physician.
- In the case where athletes are competing out-of-country, follow-up with team physician may be conducted by telephone, internet, etc., where available. The BCS team physician should also be contacted **PRIOR** to making travel arrangements to return home.
- **Athletes CANNOT be cleared to return to training/competition by paramedical track staff or BCS team coaches.**
- The diagnosis and management should follow the guidelines laid out in the Summary and Agreement Statement of the Fourth International Symposium on Concussion in Sport - Zurich 2012 (1).

3. Post Injury Period

The cornerstone of acute sport concussion management is **REST**. Rest includes:

- Physical rest (no physical activity including sport-specific training/competition, cross training, weight-lifting, moving sleds, etc.)
- Cognitive rest (no excessive mental tasks, driving, studying, etc.)
- Quiet environment
- Removal from stressful situations (media attention, team meetings, etc.)
- Minimize exposure to visual and auditory stimulation (television, video games, night clubs, etc.)

Other aspects of concussion management that are important to consider include:

- Avoiding alcohol or any recreational drug use after concussion.
- Brief napping when tired (<20 min.), but avoid excessive daytime sleep.
- Maintain "normal" aspects of life like regular meals, being outdoors, etc. providing they do not exacerbate symptoms.
- Analgesics should be minimized within the first 24-48 hours of concussion as they can mask symptoms and make it difficult to assess for deterioration. Subsequently, Tylenol can be used for headache management, as directed by a physician. Other medications or supplements may be appropriate to use, but only after review and approval by a physician.
- Chiropractic, physiotherapy or massage therapy may be considered after the acute symptoms subside for associated problems such as neck injuries or balance problems.
- Psychological support and counseling should be considered when appropriate.

The athlete should not be left alone following the injury and serial monitoring for deterioration by the BCS Medical Team is essential over the initial few hours following injury. The duration of being symptom-free varies case-to-case but is at a minimum 24-48 hours. Repeat neuropsychological testing will be done only when symptoms have completely subsided. A supervised return-to-training protocol can be started once neuropsychological testing scores have returned to baseline.

4. Return to Competition

Athletes can return to unrestricted training and competition only after the athlete has been symptom free for a period of time, neuropsychological testing (ImPACT) scores have returned to baseline, and the athlete has been cleared by a Physician experienced in sport concussion. The following progressive step-wise return to sliding protocol is recommended:

Step One: Rest (physical and mental)
Step Two: Light aerobic exercise (e.g. stationary cycle < 70% MPHR) x 15-20 minutes
Step Three: Low intensity sport-specific training drills (light resistance training, ½ speed running)
Step Four: High intensity sport-specific training drills (heavier resistance training, sprinting, sled pushing/starts without sliding)
Step Five: Sliding in ice house (if available) or from junior luge start
Step Six: Return to sliding

Generally, each step should take **24 hours** so that an athlete would take approximately one week to proceed through the full rehabilitation protocol once they are asymptomatic at rest and with provocative exercise. If any post concussion symptoms occur while in the stepwise program then the

athlete should drop back to the previous asymptomatic level and try to progress again after a further 24-hour period of rest has passed.

In cases where the athlete suffers persistent symptoms, including persistent symptom recurrence with exertion, or specific sequelae (e.g. concussive convulsions, prolonged loss of consciousness > 1 minute or prolonged cognitive impairment following the injury), a more conservative management approach may be warranted based on the physician's clinical judgment. This group may also include players who suffer multiple concussions over time or where repeat concussions occur with progressively less impact force.

Final clearance to participate in competition must be given by the BCS team physician.

Reference:

1. McCrory P, Meeuwisse W, Aubry M, Cantu B, Dvorak J, Echemendia R, Engebretsen L, Johnston K, Kutcher J, Raftery M, Sills A, Benson B, Davis G, Guskiewicz K, Herring SA, Iverson G, Jordan B, Kissick J, McCrea M, McIntosh A, Maddocks D, Makdissi M, Purcell L, Putukian M, Turner M, Schneider K, Tator C. Consensus statement on concussion in sport – the 4th international conference on concussion in sport held in Zurich, November 2012. ***BJSM*** 2013; 47: 250–258.