

United States Intercollegiate Boxing Association (USIBA) Concussion Protocol

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Definition of Concussion

A mild traumatic brain injury (mTBI) or concussion is defined as a complex pathophysiologic process affecting the brain, induced by traumatic biomechanical forces secondary to direct or indirect forces to the head. Concussion is typically caused by a blow or jolt to the head though can be caused by a significant blow to the body or whiplash motion of the neck that transfers force to the head, and results in disruption of brain function. This disturbance of brain function is typically associated with normal structural neuroimaging findings (i.e., CT scan, MRI).

Symptoms of Concussion

Concussion results in a constellation of physical, cognitive, emotional and/or sleep-related symptoms and may or may not involve a loss of consciousness (LOC). Most concussions do not cause loss of consciousness. Duration of symptoms is highly variable and may last from several minutes to days, weeks, months, or even longer in some cases. Symptoms may present immediately after the head impact or may be delayed by several hours. It is unusual but not impossible for concussion symptoms to present 24 hours or later after head impact.

Physical	Cognitive	Emotional
Headache	Feeling foggy	Feeling depressed or sad
Dizziness or imbalance	Disorientation	Being irritable
Sensitivity to light	Trouble concentrating	Feeling nervous
Sensitivity to sound	Intolerance to screen time	Tearfulness
Nausea and/or vomiting	Forgetfulness	
Blurry vision	Confusion	
Trouble sleeping or too much sleep		

Diagnosis of Concussion

Concussion is an evolving injury with symptoms that often develop over the first 24 hours. Due to this, it is sometimes not possible to diagnose a concussion at the time of the event, but the coaching staff and referees will make a judgment about the safety of the boxer to continue the bout or practice situation. In a competition event, this determination is often made on the basis of the presence of imbalance or staggering, slowed reaction time of the boxer, inability to defend themselves (gloves down), or a “glazed over” look which may indicate confusion or being dazed. The decision to stop a bout is always made for the safety of the fighter.

If there is a Suspected Concussion

The boxer will be removed from the bout or practice situation immediately. The boxer should be watched by coaching, teammates, or ideally medical personnel acutely for at least two hours, to monitor for red flag signs (see below). The boxer should continue to be monitored over the next 48 hours for development of these signs. If any of these signs present, the boxer should be taken to the nearest Emergency Department immediately.

RED FLAG SIGNS
Increasing confusion or disorientation
Very drowsy or difficult to wake up
Focal neurologic signs (i.e. facial droop, non-sensical speech, weakness or numbness on one side)
Seizures
Weakness or numbness in the arms or legs
Unusual behavior change
Asymmetric pupils

Expectations for Concussion Recovery

Most concussive injuries resolve within 7-14 days, and the athlete should expect to ultimately return to normal cognitive and physical functioning without long-term effects. There is a small subset of individuals who will suffer from prolonged symptoms, lasting weeks, months or even years. This prolongation of symptoms has many contributing factors including but not limited to on-going cervical or vestibular injury, improper amount of rest (under- or overrest following injury), medication use, or a personal or family history of migraine, ADHD, depression or anxiety. A health professional trained in concussion management can help navigate and treat the causes of prolonged symptoms.

Next Steps in Management for Concussion

It is highly recommended to see a healthcare professional as soon as possible for appropriate management of this injury. It is strongly recommended that a physician manage the below return to learn and return to play progressions.

Return to Learn

Generally speaking, 1-2 days of rest is recommended which includes staying home from classes, limiting screen time, and no physical activity. Following this 1-2 days, gradual return to learn or cognitive exertion is recommended which may include returning to a portion of his or her classes each day, or partial time in each class. The student-athlete may also choose to return to a full class schedule but he or she is recommended to take frequent breaks such as putting his head down, to prevent increasing symptoms. Continued presence of symptoms should not prevent the start of the return to learn progression, and the student should engage in cognitive activity to symptom threshold (some symptoms are expected, major exacerbation should be avoided). If the student-athlete has an injury outside of normal class time (i.e. during the summer or winter break), gradual cognitive exertion can be simulated with increasing screen time, reading, and multitasking exercises. Return to physical activity can begin once symptoms are mild or absent during typical cognitive exertion. Ultimately each athlete's return to learn progression should be individualized for each athlete's needs, symptoms, and background.

Return to Play

The return to play protocol can begin once the athlete has mild or absent symptoms with typical cognitive exertion. Each return to play protocol should be individualized for the athlete. Return to play should progress gradually through steps aimed to assess the recovery of the brain injury. The athlete will begin with light aerobic exercise and progress to full contact (sparring) practice before returning to a competition scenario. Each stage (see Table 1 below for stages) should be separated by approximately 24 hours. If the athlete's symptoms exacerbate during any one of these stages, they should stop and resume the following day and the last tolerated stage, proceeding forward as they are able. No analgesic medications should be used during the return to play progression so as not to mask symptoms of lingering brain injury. This progression should be performed under the supervision of a coach, athletic trainer, or healthcare professional.

Table 1 Graduated return to play protocol

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg, passing drills in football and ice hockey May start progressive resistance training	Exercise, coordination and cognitive load
5. Full-contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

During the whole progression

-Avoid alcohol

-Focus on getting good sleep. For the first 1-2 days, the student-athlete can sleep however much he feels he requires. Following 1-2 days, he should aim for 8-9 hours per night, going to sleep about the same time each night and waking up about the same time each morning and avoiding daytime napping.

-Stay hydrated

-Eat regular, healthful meals

-Exert to symptom threshold and then back off

Concussions can occur outside of the ring

Athletes may have a concussion outside of practice or bouts, such as in the setting of a car accident, other recreational sports, or a fall. These injuries should be treated the same as if they had occurred during supervised training or competition with physician involvement, appropriate rest, and supervised return to learn and return to play.

Things a physician may recommend

-A physician may recommend imaging (CT or MRI) though this is not routinely done and in most circumstances will not change the management of the athlete.

-He or she may recommend medication treatment with an anti-inflammatory medication, vitamins or supplements.

-He or she may recommend referral to physical therapy for vestibular assessment or neck examination.

-He or she may recommend referral to psychiatry or psychology for pre-existing depression or anxiety, increased emotionality following injury, or difficulty coping with the psychological and social aspects of the injury.

-He or she may recommend referral to a neuropsychologist for formal neurocognitive testing, typically in the event of prolonged symptoms with prominent cognitive complaints (memory loss, trouble with concentration), or in the case of pre-existing ADD or ADHD.

-He or she may supervise the athlete's exercise in the office setting to determine if readiness to return to play or to identify any barriers to symptom recovery.

Pre-season Baseline Testing

Most concussions can be managed appropriately without the use of baseline testing, however this can add some valuable objective data to the management team when available.

Pre-season baseline testing is recommended for every contact athlete to serve as a tool to compare the athlete against himself should an injury occur. Baseline testing results are then compared to post-injury results to be used as one tool in the assessment of an injured athlete. These tests are not diagnostic of injury or clearly indicative of injury recovery, but can and should be used as part of a comprehensive medical decision-making process. Post-injury testing can be completed even when the athlete does not have a pre-season baseline test, but clinical judgment is required in the interpretation of these results. Baseline testing should ideally include neurocognitive testing (computerized or pencil and paper), balance testing, symptom inventory, and reaction time testing. Extended baseline assessment may include a visit with a health professional with expertise in brain trauma, a detailed neurological examination, MRI imaging, advanced EEG testing, and/or more comprehensive neuropsychological testing.

Concussion Education for Coaches and Boxers

Annual concussion education is highly recommended for all coaches and referees. For those that do not have access to live educational sessions or conferences, it is recommended to complete the below online educational course provided by the CDC Heads Up website.

<http://www.cdc.gov/headsup/providers/training/index.html>

It is also recommended that each participating student-athlete have annual formal concussion education provided by the team physician, coach, or available healthcare professional with training in concussion care.

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Introduction for Ringside Physicians

Introduction

-United States Intercollegiate Boxing Association (USIBA) is a club sport program supporting male and female boxing in the college and university system.

-As part of a health and safety initiative, USIBA requires ringside physicians to review this document prior to participation with a USIBA-sponsored event.

Rules and Regulations:

1. A bout may consist of 3 rounds, lasting 3 minutes each, or 3 rounds lasting 2 minutes each.
2. The bout can end by knockout, technical knockout, or completion of three rounds and then the victor will be decided by ringside judges.

Preparation prior to covering an event:

1. All ringside physicians should be ACLS certified and up to date on CPR training
2. All ringside physicians should minimally take the CDC course for concussion diagnosis and management <http://www.cdc.gov/headsup/providers/training/index.html>

Pre-competition

1. A pre-participation physical examination is required for every boxer. These typically occur the morning of the bout. This allows an opportunity to identify physical limitations that may impair the fighter's safety. A bout can be canceled based on this examination if you deem that the boxer is not safe to fight.
 - a. Review previous fight results when available
 - b. Medical history including cardiac, seizures, syncope, dizziness, shortness of breath, and family history of sudden death should be reviewed.
 - c. Physical examination
 - i. Vital signs, weight; watch for rapid cutting weight which can lead to dehydration, arrhythmias, seizures
 - ii. Skin: look for traumatic or surgical scars, rashes
 - iii. Eyes: signs of infection, cataracts or previous surgery
 - iv. Ears: ruptured tympanic membranes
 - v. Nose: rhinitis, deviation
 - vi. Respiratory: prolonged expiration, wheezing
 - vii. Cardiac: arrhythmias, murmurs
 - viii. Abdominal: distension, tenderness
 - ix. MSK: range of motion, joint deformities
 - x. Neurologic: pupils, fundi, cognitive, motor, cerebellar, sensory

xi. Female fighters: urine pregnancy test

Preparation at the event:

1. Ringside physicians should be prepared with gloves, gauze, a flashlight, and a stethoscope for every event
2. Introduce yourself to the referees and establish with them who is in charge of calling the fight in the event of injury.
3. Establish an emergency action plan: where is medical equipment, a defibrillator, resuscitation equipment, and a back board if needed. How would you evacuate the athlete from the ring and the building in case of emergency? Introduce yourself to EMS if they are covering the event.
4. Inspect the ring and make sure you have easy access to it.

During the Bout

1. Make sure you have good visibility and do not hesitate to move around so that you can see both boxers at all times
2. You or the referee may call the fight during a round, at a referee-called timeout, or between rounds.
 - a. During a round watch for inability to protect oneself, dropped gloves, incoordination of footwork and punching, uncontrolled bleeding from an eye cut or nosebleed
 - b. During a timeout or between rounds, the referee or corner man may ask the physician to examine the fighter. It is important to ask if the fighter wants to continue the bout. Examine for quick answers, orientation, pupillary response, ocular movements, and coordination as able.

After the Bout

1. After each fight, both boxers are required to be examined by a ringside physician.
 - a. Observe gait, pupil response to light, and examine hands for injury
 - b. Ask if they are hurt, and orientation questions such as where they are and who they just fought.
2. Refer to a medical center for severe lacerations, musculoskeletal injuries requiring immobilization or assisted ambulation, brain or spine injury, shortness of breath. If you are unsure, you have the option of utilizing the teammates or coaches to watch the athlete and check in with them after each of the next few bouts, but if you do not feel that proper attention or supervision can be paid to the athlete, refer to a medical center for evaluation.
3. Each boxer will have a fight card that records their victories and defeats as well as their compliance with medical examination post-fight. You need to record the outcome of the match on these cards as well as initial them to indicate that you have seen the athlete post-fight for examination.

Alessi AG, Schwartz M. Mixed Martial Arts: Ringside Safety. Sports Medicine A Comprehensive Review. Wolters Kluwer. January 2013.