
POLICY SFMMA006: MILD TRAUMATIC BRAIN INJURY: CONSIDERATIONS AND MANAGEMENT

1. INTRODUCTION:

Mild traumatic brain injury (TBI) is common and, while typically benign, has a risk of serious short- and long-term sequelae. As a result, it is one of the most important public health problems.

2. DEFINITIONS:

2.1. Mild TBI:

Mild TBI occurs with head injury due to contact and/or acceleration/deceleration forces. The term "concussion" is often used in the medical literature as a synonym for mild TBI. Mild TBI/ concussion is best defined as a "trauma-induced alteration in mental status that may or may not involve loss of consciousness".

2.2. Sub-Concussive Impact:

Sub-concussive Impact cause brain injuries that are below the concussion threshold: the brain is shaken, but not so violently that the damage to brain cell are severe enough to see symptoms.

3. CONSEQUENCES:

The prognosis for complete recovery is good for an appropriately managed concussion. Nonetheless, there are a variety of short- and long-term sequelae that have important implications.

3.1. Short Term

- **Second Impact Syndrome:** The term "second impact syndrome" is used when brain swelling develops in the setting of a second concussion, which has occurred when the patient is still symptomatic from an earlier concussion. This is a rare but potentially fatal complication of mild head injury. There is no specific treatment for this condition; management focuses on mitigating increased intracranial pressure. (SEE TABLE OF WARNING SIGNS)
- **Post Concussion Syndrome:** Post concussion syndrome may result from brain injury or from trauma involving the head and neck. These include headache, dizziness, altered personality, and memory impairment. These typically develop in the first days after concussion and generally resolve within a few weeks to a few months. A history of a prior concussion, is a risk factor for prolonged symptoms after concussion.
- **Post-Traumatic Headaches:** Headaches may occur after a concussion, usually between 1-4 weeks post injury.
- **Sleep Disturbances:** Sleep-wake disturbances are among the most prevalent and persistent sequelae of concussion. Patients suffering from a concussion of any severity, in both the acute and chronic phases, commonly report excessive daytime sleepiness, increased sleep need, insomnia, and sleep fragmentation. Irritability and anxiety may also occur as a result of concussion.
- **Post-Traumatic Vertigo and Dizziness:** Post-traumatic vertigo and dizziness is a substantial contributor to disability after a concussion.

3.2. Long Term

- **Cranial Nerve Injuries:** Cranial nerves are responsible for head and neck function. Damage to these includes a loss of smell, double vision, facial pain and facial palsy.
- **Post-Traumatic Epilepsy:** Concussion is associated with a twofold increase in the risk of epilepsy for the first five years after injury.
- **Chronic Traumatic Encephalopathy (CTE):** Repeated concussions can cause cumulative neuropsychologic problems ie, increasingly more severe and longer duration of mental symptoms after each separate incident. In addition to memory deficits, dementia and neuropsychological problems (behaviour, personality changes, depression, and suicidality), parkinsonism and other speech and gait abnormalities are described.
- CTE is a degenerative brain disorder found in athletes, military veterans and people with a history of brain trauma. The best available evidence tells us that CTE is caused by repetitive hits to the head sustained over a period of years. Most people that have been diagnosed with CTE suffered hundreds or thousands of head impacts over the course of many years playing contact sports or serving in the military. It is not just concussions that cause CTE, the best available evidence points towards sub-concussive impacts, or hits to the head that don't cause "full-blown" concussions, as the biggest factor. There has been many people who suffered many years of head impacts, but do not develop CTE.

4. MANAGEMENT PLAN

4.1. Prevention of Concussion and Sub-Concussive Impacts

Delay the introduction of contact:

- Children under the age of 12 will not spar with contact to the head at all.
- Children under the age of 16 may only spar with light touch contact to the head.
- The minimum age for a Boxing, Kickboxing, Muay Thai or an MMA bout is 16 years old, unless the rules of the bout exclude head striking contact.

4.2. Eliminate contact where unnecessary:

SASSOM MMA recommends heavy sparring not to be undertaken more than once per week.

4.3. Modify contact where appropriate:

SASSOM MMA recommends only light to medium contact when sparring for non fighters, and fighters between training camps.

4.4. Return to Activity

While there is no formal recommendation for a rest period post concussion, based on anecdotal evidence SASSOM MMA has adopted the following:

- **No Loss of Consciousness:**

If an athlete suffers a concussion or suspected concussion and does not lose consciousness then the athlete may not take part in any training where contact to the head is likely for a period of at least 14-days after the incident.

- **Loss of Consciousness:**

If an athlete suffers a concussion and loses consciousness then the athlete must present a medical certificate clearing them for contact sport and may not take part in any training where contact to the head is likely for a period of at least 30-days after the incident. An additional week will be added for any concussion lasting over 5 minutes, per minute of unconsciousness.

4. SIGNS AND TREATMENT OF A CONCUSSION

A. Recognize & Remove

Concussion should be suspected if one or more of the following visible clues, symptoms or errors in memory questions are present.

B. Visible Clues of Suspected Concussion

Visible clues are things you can see. Any one or more of the following visual clues can indicate a possible concussion:

- Loss of consciousness / Responsiveness / Slow to get up
- Seizure or convulsion
- Unsteady on feet / Balance problems / Incoordination
- Grabbing / Clutching of head
- Dazed, blank or vacant look
- Vomiting

C. Symptoms of Suspected Concussion

Symptoms are things they will tell you they feel, some may not be present straight away and may appear in days or weeks to follow. Presence of any one or more of the following symptoms may suggest a concussion:

- Nausea
- Amnesia
- Dizziness
- Neck Pain
- Sensitivity to noise
- Nervous or Anxious
- Fatigue or Low energy
- Drowsiness or "Don't feel right"
- Headache or "Pressure in head"
- Blurred vision or Sensitivity to light
- More emotional, Irritability, Sadness
- Feeling slowed down or Feeling like "in a fog"

D. Memory Function Test

The following should be performed on any suspected concussion. An incorrect response to any one question is considered a positive test for cognitive impairment after head injury, and the athlete must be removed from action:

- What is your name?
- What is the name of this place?
- Why are you here?
- What month are we in?
- What year are we in?
- What town/suburb are you in?
- How old are you?
- What is your date of birth?
- What time of day is it? (morning, afternoon, evening)
- Three objects for recall (e.g apple, table, penny)

RED FLAGS

Any athlete with a suspected concussion should be IMMEDIATELY REMOVED FROM TRAINING, and should not be returned to activity until they are assessed medically. Any person with a suspected concussion should not be left alone and should not drive a motor vehicle.

If any of the following occurs consider calling an ambulance (000) for urgent medical treatment:

- You vomit more than 3 times
- You have a severe headache or neck pain, or a headache or neck pain that gets worse
- You have a seizure
- You have trouble walking or talking
- Your vision changes
- You feel weak or numb in part of your body
- You lose control over your bladder or bowel

REMEMBER

The basic principles of first aid should be followed and applied