

Concussion Management



**DYLAN
STEIGERS**

**CONCUSSION
PROJECT**

EDUCATE - TEST - PROTECT

406.542.0808



WWW.DYLANSTEIGERSCONCUSSIONPROJECT.COM

What is a Concussion?

A concussion (kun-KUSH-un) is an injury to the tissue or blood vessels of the brain. It is also called a “closed head injury” or “mild traumatic brain injury” (MTBI). Concussions happen when the soft tissues of the brain are forced against the bone of the skull. The injury can cause the brain to have trouble working normally for a short time.

What are Possible causes of a Concussion?

A concussion is usually caused by a blow to the head. A concussion may happen because of a fall, a motor vehicle crash, or a sports injury. Sports with the highest rate of concussion in high school are: football, girls’ soccer, and boys’ lacrosse. It is estimated that 10% to 20% of athletes suffer concussions each year.

What are the Signs and Symptoms of a Concussion?

Every concussion is different. Right after the injury, the athlete may seem dazed, lose consciousness, or have a seizure (convulsion). Some symptoms may not happen for days or weeks after the concussion. Symptoms of a concussion may last anywhere from a few seconds to several weeks and in some cases much longer. After a concussion, most athletes who follow the return to play protocol should recover within three to four weeks. After the injury, the athlete may have one or more of these symptoms:

Physical

Headache
Nausea
usual
Vomiting
Balance problems
Visual problems
Fatigue
Sensitivity to light
Sensitivity to noise
Dazed
Stunned

Cognitive

Feeling mentally “foggy”
Feeling slowed down
Difficulty concentrating
Difficulty remembering
Forgetful of recent information
Confused about recent events
Answers questions slowly
Repeats questions

Emotional

Irritability
Sadness
More emotional
Nervousness

Sleep

Drowsiness
Sleeping more than usual
Sleeping less than usual
Difficulty falling asleep

Symptoms of a concussion may be so minor that they are hard to observe. Some athletes may act fine, even if they feel different than normal. This often occurs with athletes who are highly motivated to return to sport. Because of confusion, the concussion itself may make it hard for the athlete to know that something is different. You will need to ask the individual if they have any symptoms. You will also need to monitor them more closely for a few weeks after the injury.

Contact the Dylan Steigers Concussion Project if:

- *The Dylan Steigers Concussion Project is a non-profit organization which provides baseline concussion testing and education to the greater Missoula area.*
 - o The athlete has had a baseline concussion test and is symptom free
 - o The athlete has not had a baseline concussion test in the past 2 years.
 - o The athlete no longer has symptoms of a concussion and you feel they are ready to return to school/athletics.
 - o You are not sure who to contact or where to go to get you child cleared to return to school/athletics.
 - o The athlete's physician has requested they undergo neurocognitive, visual eye tracking, balance, and symptom evaluations.

Instructions for an Injured Athlete and their Parents:

Medications:

- Give the athlete acetaminophen or ibuprofen for headache or neck pain only if your caregiver says it is OK. **Note: Medications may hide some of the symptoms associated with a concussion creating a false sense of healing*

Care:

- **Waking:** The athlete should be observed frequently (every 2-3 hours) for the first 48-72 hours. You should wake them *if* anything seems abnormal (such as slow or fast breathing). If once awoken, they have worsening signs and symptoms since the last time you checked on them they should be immediately transported to the emergency room. **Note: Once the individual has been medically evaluated, SLEEP is the treatment for a concussion.*
- **Ice:** Sometimes a blow to the head may cause bruising, swelling, and/or a neck pain. It is recommended that you use ice to decrease your child's pain or swelling. It is best to start using ice right after an injury and up to 24 to 48 hours afterwards. Do not use ice directly on the skin, or for longer than 20 minutes at a time.
- **Rest:** It is imperative for your athlete's recovery that they receive physical and cognitive rest. This is called "shutting down". They need to rest their brain so it is able to recover. Participating in anything which creates undue stress on their brain may increase their symptoms and slow their recovery. They should not be allowed to play video games, watch TV, text, talk on the phone, work on a computer, read, participate in physical activity, exercise, or be placed in stressful situations.
- **Rehabilitation:** Physical therapy may be appropriate for an athlete who has suffered head injuries. Commonly, neck and back injuries can be associated with concussions. Physical therapy may be utilized to speed the athlete's recovery and decrease their symptoms.
- **Sports:** Once the athlete is symptom free and cleared to begin the RTP (return to play) protocol they should follow the progression described in the return to play protocol.

Care Continued:

The most important thing you can do for your child is to watch for signs of a more serious problem. Your child may need tests or to stay in the hospital for a short time. Your child may be sent home with special instructions. Your child may be referred to physical and/or speech therapy. You may need to watch your child's symptoms for several weeks.

- If your child lost consciousness, a CT or MRI scan may be taken of your child's brain to check for a serious injury. Your child must be able to hold still for a short time for the test to be done. Your child may have a concussion even if it does not show up on the scan.
** NOTE: Concussions cannot be detected by a neuroimaging test; a concussion is a functional not a structural injury. CT or an MRI is used to rule out more serious bleeding in the brain, not to diagnose a concussion.*
- Your child caregiver may have x-rays taken of the neck or face if there is a chance of other injuries.
- Allow your child to get plenty of rest.
- Your child should only take medicine that his caregiver says is OK.
- Sometimes a blow to the head may cause bruising, swelling, or a cut on your child's skin. An ice pack may be used to decrease your child's pain and swelling. It is best to start using ice right after an injury and up to 24 to 48 hours afterwards. Do not use ice directly on the skin, or for longer than 20 minutes at a time. If ice is not covered or is put on one area of your child's body for too long, it may cause frostbite.
- Your child needs to be protected from another head injury for a period of time. It is dangerous to receive another concussion before the brain has recovered (gotten better) from the first one. Your child may not be able to play sports or do activities that may result in a blow to the head. Your child's caregiver will let you know when it is OK for your child to return to normal activities.
- Let your child's teachers, coaches, or day-care providers know about the injury and symptoms to watch

SEEK ADDITIONAL CARE IMMEDIATELY IF:

** The athlete should be seen in an emergency room if they shows signs of:*

- Increasing confusion or a change in personality.
- Blood or clear fluid coming out of the ears or nose.
- Not knowing where he/she is, or does not recognize people that are familiar.
- New problems with vision (blurry or double vision).
- Repeated or forceful vomiting.
- Slurred or confused speech.
- Weakness, loss of feeling, or new problems with coordination (balance and movement).

Dial 9-1-1 or 0 (Operator) for an ambulance if the athlete has any of the following symptoms:

- Pupils (black part in the center of the eye) are unequal in size, and this is new for your child.
- Seizures (convulsions).
- Cannot be woken up.
- Stops responding to you or passes out (faints).

Your child may be at higher risk of having a more serious head injury if he/she:

- Had a previous head injury or concussion.
- Is on medicine that thins his blood, or has a bleeding disorder.
- Has other neurologic (brain) problems.
- Has difficulty walking and falls often.
- Is active in high impact contact sports, like soccer and football.

Will my Child have any Lasting Effects from a Concussion?

Rarely, some people may develop post-concussion syndrome (PCS). Symptoms of PCS may not start for several weeks or months after an injury. Symptoms of PCS usually go away over time. Some people may need special treatment. Call your caregiver if your child has concussion symptoms for more than six weeks after the injury. Your child may have PCS if one or more of the following symptoms start or continue six weeks or more after the injury:

- Headache that will not go away.
- Dizziness or vision changes.
- Irritable, depressed, angers easily, or not able to control emotions.
- Problems with memory, planning, or thinking.

Risks:

- Your child may also have other injuries at the same time as the concussion, like a neck or face injury. The longer your child was unconscious the more serious the concussion may be. The risk of serious problems are decreased if you and your caregiver follow your caregiver's advice.
- Each additional concussion your child has may increase his risk of having problems later in life. These problems may include poor coordination, or trouble thinking or concentrating. Having repeated concussions can be life threatening.

Concussion Rehabilitation

Stepwise Return to School:

At the high school level, returning the student athlete to school is generally the highest priority and the one that carries the lowest risk once symptoms have disappeared. The school nurse, guidance counselor, certified athletic trainer, athletic staff, psychologist and social worker should be made aware of the student athlete's injury and work as a team to coordinate these accommodations. Attending school presents a major problem for student athletes suffering from a concussion no matter the level. Teachers and professors often believe that the student-athletes are malingering and they can be less than sympathetic when student athletes are excused from tests, or need extra time for tests and turning in papers. The absence of visible signs of injury, such as a cast, brace or bandage, contributes to this misunderstanding.

Adolescents with concussions may want to attend school out of fear they will miss necessary work and get too far behind. Since student-athletes with concussions seem to recover more rapidly with rest, we recommend that activities should be restricted for several days following the injury until they are symptom free. Exercise, whether it is physical or mental, will usually increase their symptoms: headache, dizziness, nausea and light-headedness. Most student athletes will have difficulty with concentration, memory (both working and short term), and their processing speed—which negatively affects their learning and performance.

In turn, struggling to learn and perform “overuses” the brain at a time when it is working hard to recover, and can negatively affect recovery. For this reason a concussed individual should not return to school until his/her headaches and other symptoms have cleared. At home, the student-athlete should rest. To minimize increased oxygen demands on the injured vulnerable brain cells, athletes should not participate in the following activities: reading, computer use, video games, text messaging, physical exercise, hot tubs and socializing with friends. Attending movies may cause a marked increase in symptoms if the student-athlete experiences difficulty with light or noise.

When student athletes are symptoms free, they can begin trying brief periods of reading or studying. If headaches or other symptoms return they should discontinue the activity and resume rest. They may return to school for gradually increasing periods of time when they can tolerate a couple of hours of thinking. Some student-athletes may require starting school later in the day in order to sleep longer. They should be driven to school to avoid noise on the bus or the exercise of walking to school.

Student-athletes may attend classes unless they develop symptoms (usually a headache). If they become symptomatic they should go to the nurse's office, lie down, and skip the next period. (Rest periods often may be necessary when student-athletes first return to school.) If symptoms occur again in the next period, after resting, they should return home. Math and chemistry classes may need to be avoided initially since they seem to cause more symptoms than other classes. If a student-athlete can only attend school part-time, non-core classes should be avoided in favor of core subjects (English, History, Science and Language).

Approximately 10% of student-athletes with concussions have symptoms lasting over a month and they are considered to have a Complex Concussion (the newest terminology) or what in the past was described as Post-concussion Syndrome. Some student-athletes may need to have a 504 plan (spells out the modifications and accommodations that will be needed for these students to have an opportunity perform at the same level as their peers) adopted and some student-athletes who cannot tolerate the active school environment may require home tutoring. The guidance counselor may be asked to expedite some of these accommodations.

DSCP Protocol with ImPACT Baseline Testing

1. Pre Season: Baseline Testing & Education

- o Educate athletes on concussions
- o Athlete completes ImPACT Baseline test
- o Athlete completes BESS Test (Balance error system test)
- o Athlete completes King-Devick Test (Eye tracking test)

2. Concussion is Suspected

- o Sideline assessment
 - * Once the athlete has been removed from the field and been stabilized, a full medical and neurological assessment exam should be undertaken. This assessment should include:
 - Evaluation of potential signs and symptoms of concussion
 - Evaluation/diagnosis of concussion using a sideline mental status examination (DSCP recommends the SCAT II)
 - Consideration for urgent hospital referral with severity of symptoms as well as increased symptoms over time.
- o If concussion is suspected: Immediate removal from play
- o Athletic Trainer or the DSCP/Peak Performance can assist in referral to a concussion specialist (MD/DO/PA/ NP/Neuropsychologist)
- o At discretion of trained medical personnel: Optional brain imaging if needed

3. Post Testing and Treatment Plan

- o Athlete to take Impact Post Injury test when asymptomatic
- o Athlete completes post BESS Test
- o Athlete completes post King-Devick Test
- o Coordinate plan of care between athlete, parent, MD/DO/NP, PA/Neuropsychologist, athletic trainer, school nurse, teachers, DSCP, and other necessary healthcare providers including Physical Therapists and Speech Therapists.
- o If athlete needs additional and more extensive neuropsychological testing refer to Neuropsychologist

4. Determine if Athlete is Ready for Non Contact Activity

- o Criteria
 - Symptom free at rest & with cognitive exertion
 - Post ImPact, BESS, and King-Devick tests are within normal range of Baselines
 - Asymptomatic Physical Exertion Testing
 - Written Clearance for Progression to activity by supervising MD/DO/NP/PA/Neuropsychologist
- o If the above are all YES, then athlete may begin return to play

5. Safe-Return to Play

If any post-concussion symptoms develop at any stage, drop back to the previous level and try to progress again after 24 hours. No medications may be taken at any step of the progression. This is to prevent masking a more serious underlying condition! You must check in with your athletic trainer (when available) every day PRIOR to practice!

Continued....

Rehabilitation Stage

Functional Exercise

- | | |
|-------------------------------|---------------------------------------------------------------------------------------------------------|
| 1. No activity | Complete physical and cognitive rest |
| 2. Light aerobic activity | Walking, swimming, stationary cycling at or below 70% maximum heart rate <i>no resistance exercises</i> |
| 3. Sport-specific exercise | Specific sport-related drills but no head impact |
| 4. Noncontact training drills | More complex drills, may start light resistance training |
| 5. Full-contact practice | After medical clearance, participate in normal training |
| 6. Return to play | Normal game play |

DSCP Protocol without prior ImPACT Baseline Testing

1. Concussion is Suspected

- o Sideline assessment
 - * Once the patient has been removed from the field and been stabilized, a full medical and neurological assessment exam should be undertaken. This assessment should include:
 - Evaluation of potential signs and symptoms of concussion
 - Evaluation/diagnosis of concussion using a sideline mental status examination (DSCP recommends the SCAT II)
 - Consideration for urgent hospital referral with severity of symptoms as well as increased symptoms over time.
- o If concussion is suspected: Immediate removal from play
- o Athletic Trainer or the DSCP/Peak Performance can assist in referral to a concussion specialist (MD/DO/PA/ NP/Neuropsychologist)
- o At discretion of trained medical personnel: Optional brain imaging if needed

2. Post Testing and Treatment Plan

- o Athlete should schedule through the Dylan Steigers Concussion Project ASAP to be tested to set a concussed baseline to measure neurocognitive progression and healing
- o Athlete may take ImPACT Post Injury
- o Athlete may complete post BESS Test baseline to track progression
- o Athlete may complete post King-Devick Test to track progression
- o Coordinate plan of care between athlete, parent, MD/DO/NP, PA, Neuropsychologist, athletic trainer, school nurse, teachers, and and other necessary healthcare providers including Physical Therapists and Speech Therapists.
- o If athlete needs additional and more extensive neuropsychological testing refer to Neuropsychologist

3. Determine if Athlete is Ready for Non Contact Activity

- o Criteria
 - Symptom free at rest & with cognitive exertion
 - (If previously taken post concussion) Post ImPact, BESS, and King-Devick tests are within normal range of Baselines
 - Asymptomatic Physical Exertion Testing
 - Written Clearance for Progression to activity by supervising MD/DO/NP/PA/ Neuropsychologist
- o If the above are all YES, then athlete may begin return to play

4. Safe-Return to Play

If any post-concussion symptoms develop at any stage, drop back to the previous level and try to progress again after 24 hours. No medications may be taken at any step of the progression. This is to prevent masking a more serious underlying condition! You must check in with your athletic trainer (when available) every day PRIOR to practice!

Rehabilitation Stage

Functional Exercise

- | | |
|-------------------------------|---------------------------------------------------------------------------------------------------|
| 1. No activity | Complete physical and cognitive rest |
| 2. Light aerobic activity | Walking, swimming, stationary cycling at or below 70% maximum heart rate; no resistance exercises |
| 3. Sport-specific exercise | Specific sport-related drills but no head impact |
| 4. Noncontact training drills | More complex drills, may start light resistance training |
| 5. Full-contact practice | After medical clearance, participate in normal training |
| 6. Return to play | Normal game play |

Where can I go for more information?

You can contact one of the following national organizations for more information about concussions and head injuries:

The Dylan Steigers Concussion Project

Web Address: www.DylanSteigersConcussionProject.com

Peak Performance Physical Therapy

1940 Harve St, Ste 2

Phone: 1- 406-542-0808

Web Address: www.peakptmt.com

Centers for Disease Control

Web Address: <http://www.cdc.gov>