

MANAGEMENT OF CONCUSSION (TRAUMATIC BRAIN INJURY) IN THE SCHOOL SETTING

Madison Metropolitan School District (MMSD) is committed to ensuring the safety of students while at school and when participating in any school-sponsored events. MMSD recognizes that education of key individuals, including students, student-athletes, parents, coaches, school administrators, athletic directors, teachers, athletic trainers, physicians and other health care providers about prevention and early recognition of concussions remains the most important components of improving the care of students with concussions.

The MMSD is aware that head injuries, including concussions, can happen to any student. The MMSD has developed procedures to address head injuries that occur during the school day, during school sponsored activities, and during school sponsored athletic events. Additionally, the MMSD is committed to providing students who have sustained a concussion assistance with transitioning back to school and school associated activities by utilizing the **Return to Learn** and **Return to Play** protocols.

What is a Concussion?

- A. **Concussion:** A concussion is a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces and includes five major features*:
1. May be caused by direct blow to the head, face, neck, or elsewhere on the body with an “impulsive” force transmitted to the head.
 2. Concussion typically results in the rapid onset of short-lived impairment of neurologic function that resolves spontaneously.
 3. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.
 4. Concussion results in a graded set of clinical symptoms that may or may not involve loss of consciousness (LOC). Resolution of the clinical and cognitive functions typically follows a sequential course; however, it is important to note that in a small percentage of cases, post-concussive symptoms may be prolonged.
 5. No abnormality on standard structural neuroimaging studies is seen in a concussion.

*(Consensus Statement of Concussion in Sport- Zurich 2012)

B. Possible Symptoms of a Concussion

Note: Only one symptom or any combination of symptoms may be present:



<p>Cognitive: How a person thinks</p> <ul style="list-style-type: none"> ● Difficulty thinking clearly ● Difficulty concentrating or remembering ● Feeling more slowed down ● Feeling sluggish, hazy, foggy or groggy ● Slowed speech 	<p>Physical: How a person feels physically</p> <ul style="list-style-type: none"> ● Headache or “pressure” in head ● Nausea or vomiting ● Balance problems or dizziness ● Fatigue or feeling tired ● Blurry or double vision ● Sensitivity to light or noise ● Ringing in the ears ● Numbness or tingling ● Does not “feel right” ● Disorientation
<p>Emotional: How a person feels emotionally</p> <ul style="list-style-type: none"> ● Irritable ● Sad ● More emotional than usual ● Nervous/anxious ● Lack of motivation ● Personality changes 	<p>Sleep: How a person experiences energy and sleep</p> <ul style="list-style-type: none"> ● Drowsy ● Sleeps less than usual ● Sleeps more than usual ● Has trouble falling asleep ● Fatigue

Remember, you can’t see a concussion and some students may not experience or report symptoms until hours or days after the injury. Most young people with a concussion will recover quickly and fully. But for some, concussion symptoms can last for days, weeks, or longer.

CONCUSSION MANAGEMENT TEAM

Supporting a student recovering from a concussion and transitioning that student back to school or sports requires a collaborative team-based approach. It is encouraged that this team communicate on a regular basis. The concussion team may consist of the following members:

A. STUDENT

1. Report symptoms to their primary care provider and/or school nurse. If the student is an athlete they should report their symptoms to their coach, school athletic trainer, and school nurse, or school counselor.
2. Follow instructions from their primary care provider/sports medicine physician, school nurse and if an athlete, the school’s athletic trainer.
3. Communicate with teachers and other academic staff if they are experiencing symptoms and what adjustments/accommodations in the classroom may be helpful to them.
4. Communicate with the school nurse regarding concussion symptoms and status of recovery. If the student is participating in athletics, the athlete will follow up on a regular basis with the school’s assigned athletic trainer.

B. PARENTS/GUARDIAN

1. Communicate with school staff (e.g. school nurse, teacher, school counselor) regarding the student's concussion, symptoms and transition back to school and physical activity.
2. Communicate with the student's primary care provider/sports medicine physician or designated specialist regarding the student's symptoms and transition back to school and physical activity.
3. If the student is participating in athletics, communicate with the schools designated athletic trainer, primary care provider/sports medicine physician or designated specialist and follow instructions/protocols regarding the student's return to participation.
4. Provide any forms and written orders from the healthcare provider to the school in a timely manner.

C. SCHOOL NURSE

1. Assess students that have sustained a head injury and observe for delayed onset of symptoms. Refer for further medical care as needed.
2. Assess students to determine if signs/symptoms warrant emergency management. If emergency signs or symptoms are present, call 911. (See pages 7 & 9 for emergency signs and symptoms.)
3. Recommend follow-up with student's primary care provider/ sports medicine physician if they are exhibiting signs or symptoms of a concussion.
4. Provide parents/guardians written/verbal instructions in regards to observing a student with a suspected concussion and what symptoms warrant emergency management.
5. Provide parents/guardians with *School Recommendations Following a Concussion* form (to be completed by primary care provider/sports medicine physician or designated specialist) when referred for further medical care.
6. Assist in the implementation of primary care provider/sports medicine physician or designated specialist suggested classroom adjustments/ accommodations.
7. Monitor the student's symptoms and coordinate their return to the classroom /academic activities. In the case of non-sport related concussion, coordinate the return to play/physical activity.
8. Educate students and school staff on concussions, their physical, emotional, and behavioral effects, and any necessary classroom adjustments/accommodations.
9. When a student suffers prolonged post-concussive symptoms, coordinate a 504 or special education evaluation when appropriate.
10. Collaborate and maintain consistent communication with the school athletic trainer if the student is an athlete.

D. ATHLETIC TRAINER

1. Assess student athletes that have sustained a possible concussion.
2. Evaluate the student to determine if any signs and symptoms warrant emergency management. If emergency signs or symptoms are present, call 911. (See pages 7 & 9 for emergency signs and symptoms.)
3. Provide parents/guardians written/verbal instructions for observing a student with a concussion or a suspected concussion and what symptoms warrant emergency management.
4. Provide parents/guardians and student with verbal/written instructions on concussions and the importance of observing the student for concussive complications and the possible delayed onset of symptoms.
5. Provide parents/guardians with *School Recommendations Following a Concussion* form (to be completed by primary care provider/sports medicine physician or designated specialist) at the time of evaluation.
6. Instruct the student and the parents/guardians to contact primary health care provider or sports medicine physician if school accommodations or other accommodations that require a provider signature are required, or complicating factors such as delayed or unusual recovery are present.
7. Instruct the student to see the school nurse upon return to school.
8. Notify school nurse of student's concussion within 24 hours of injury via email or phone call. If this occurs on a Friday afternoon/evening, weekend or holiday, the communication will be made prior to the next school day.
9. Collaborate and maintain consistent communication with the school nurse if there are any questions or concerns regarding the student's return to the classroom.
10. Monitor the student athlete for symptom resolution and return to baseline functioning.
11. When appropriate, supervise the athlete in a graduated return to play progression.
12. When appropriate release the athlete to full participation with athletic activities.

E. ACADEMIC STAFF/TEACHER

1. Implement academic adjustments/accommodations in the classroom and school setting that support the recovery process post-concussion injury and minimize the exacerbation of concussion symptoms
2. Become familiar with the physical, behavioral and cognitive effects of a concussion and observe for these in students that have sustained a concussion. Adverse learning effects of concussion, in addition to strategies to support them, are summarized at the end of this resource (See Symptom Wheel). If you have further questions, contact your school nurse.
3. Communicate with the school nurse or school counselor if there are any questions or concerns regarding a student's symptoms, recovery or academic/classroom functioning.
4. Allow students to visit the school nurse for rest periods if they are experiencing increased symptoms.

For PE Teachers:

1. Remove any student from activity/play immediately if a concussion is suspected.
2. Contact school nurse immediately so they may assess the injury and determine a management plan.
3. If any emergency signs and symptoms of a concussion are present call 911.
(See pages 7 & 9 for emergency signs and symptoms.)
4. If the physical education teacher receives medical documentation, it should be shared with the school nurse the day it is received. The student should not participate in physical activity until the school nurse has reviewed the documentation and has ensured that appropriate protocols have been followed.
5. For students who do not seek further medical care, work with school nurse regarding return to activity.
6. For the student who suffers a medically-diagnosed concussion, it is highly recommended that they receive written clearance from a primary care provider, sports medicine physician or designated specialist who has examined the student before the student returns to participation in physical education class activities. They should also participate in the return to play protocol that will be directed by the primary care provider, sports medicine physician, or designated specialist who examined the student, and will be monitored by the school nurse.

F. SCHOOL COUNSELOR

1. Work with the school nurse to disseminate information regarding academic adjustments/accommodations in the classroom that support the recovery process post-concussion and minimize the exacerbation of concussion symptoms.
2. Work with academic staff to facilitate implementation of necessary academic adjustments/accommodations.
3. Maintain communication with parents/guardians regarding any needed academic supports and/or academic adjustments.
4. Monitor the student's academic progress during their recovery period and support ongoing adjustments, as needed.
5. Support any needed course changes and adjustments while ensuring that the student maintains progress toward graduation requirements (high school) and their post-secondary options of interest.
6. Ensure that any transcript maintenance needs are completed - for example, if there are changes in courses, incompletes that then become grades, or withdrawals.
7. Help student and parents/guardians be aware of, and know how to access, additional academic supports and resources, if relevant.
8. Provide short-term, solution-focused counseling support related to emotional, social, school, team, or family stressors that the student may experience during the recovery process and assist with referral to outside providers for longer-term counseling needs when indicated.

G. COACH

1. Remove any student from activity/play immediately if a concussion is suspected.
2. If any emergency signs and symptoms of a concussion are present call 911
3. Immediately contact the school nurse or athletic trainer, if they are available, so they may assess the injury and determine the management plan.
4. Contact the parent/guardian immediately and notify them of concerns for a concussion. If the suspected concussion is not an emergency, advise the parent/guardian to contact the student's primary care provider/sports medicine physician or the school's designated athletic trainer by the end of the following day. Additionally, advise the parent/guardian that if any symptoms worsen to seek emergency medical care immediately.
5. Once written clearance from the athlete's primary care provider/sports medicine physician, designated specialist, or athletic trainer is received, ensure that the student/athlete follows the stepwise return to play protocol before returning to full activity.
6. If a coach receives medical documentation they should provide this to the athletic trainer the day they receive the documentation. The athlete should not participate in physical activity until the athletic trainer has reviewed the documentation and has ensured appropriate protocols have been followed.
7. Any documentation advising academic accommodations, including the *School Recommendations Following Concussion* form received by the coach should be sent to the school nurse and a copy shared with the athletic director.
8. Collaborate and maintain consistent communication with the athletic trainer, school nurse and other district personnel to support student recovery.

H. PRIMARY CARE PROVIDER/SPORTS MEDICINE PHYSICIAN OR DESIGNATED SPECIALIST

1. Provide medical orders that outline a graduated return to learn and when appropriate, a graduated return to play.
2. Provide medical orders regarding specific recommended classroom adjustments/ accommodations.
3. Communicate with the school nurse or other school district personnel if there are any questions or concerns regarding the student's physical signs or symptoms and/ or recovery process.

CONCUSSION EDUCATION FOR MMSD ATHLETES, PARENT/GUARDIANS, COACHES

- A. Annual education of student athletes and parent/guardians will include provision of a [Parent & Athlete Concussion Information Sheet](#) from the CDC Heads Up program.

- B. All athletes and their parents/guardians will sign a statement in which the student athlete accepts the responsibility of reporting any injuries including those resulting in signs and symptoms of a concussion. This statement will also acknowledge having received, reviewed, and an understanding of the above mentioned educational material. Questions regarding the content of the training should be directed to the athletic director prior to signing a statement of understanding.
- C. At the beginning of each sport season, coaching staff of all sports will be required to view the CDC Heads Up [concussion training video](#) for coaches.
- D. Coaching staff will sign a statement in which they will acknowledge having viewed and have an understanding of the concussion education training. Questions regarding the content of the training should be directed to the athletic director prior to signing a statement of understanding.
- E. All high school athletes will have an option to participate in baseline impact testing performed every other year. Athletes and their parents will be educated regarding this testing.

MANAGEMENT OF SUSPECTED CONCUSSION OCCURRING DURING THE SCHOOL DAY

Following a head injury or if signs or symptoms of a concussion are present, the student should be immediately referred to the school nurse. If the school nurse is not available, the nurse assistant will follow the *MMSD Health Services Guidelines - Head Injuries 20.5030* and consult with the school nurse as soon as possible. In summary the following should take place:

- A. The student should be assessed to determine if any signs or symptoms warrant emergency management. If any emergency signs or symptoms are noted, call 911. The student's parent/guardian should be contacted and notified of the situation.

Below is a list of signs and symptoms that would require calling for emergency management.

- One pupil larger than the other
- Is drowsy or cannot be awakened
- Worsening headache that does not resolve
- Weakness, numbness, or decreased coordination
- Repeated vomiting
- Slurred speech
- Seizure
- Cannot recognize people or places
- Becomes increasingly confused, restless, or agitated
- Has unusual behavior
- Loss of consciousness, even briefly
- Blood or clear fluid leaking from ears, nose, mouth
- Loss of extraocular eye movements

- Skull or orbital depression
- B. If no emergency management is necessary, the student’s parent/guardian should be notified of the suspected concussion and the student should be sent home for rest under adult supervision. The student should not be allowed to drive home or be dismissed from school alone. The *Acute Concussion Assessment Form* can be used to document symptoms important for parent/guardians to share with the student’s healthcare provider.
- C. Parents will be provided the [Heads up Concussion Information Sheet for Parents](#) produced by the CDC, and a copy of the *School Recommendations Following a Concussion* form (see appendix) to be completed by the student’s primary care provider/sports medicine physician or designated specialist.
- D. The parent/guardian should be instructed to follow-up with the student’s primary care provider/sports medicine physician or designated specialist within the first 24 hours. The parent/guardian should also be instructed that the student should stay home for cognitive rest for at least 24 hours or until cognitive/physical symptoms are manageable and intermittent. Additionally, the parent/guardian should be informed that the student can be supported at school through appropriate academic adjustments.
- E. For a non-athlete student who suffers a concussion it is highly recommended that they receive written clearance from a primary care provider, sports medicine physician or designated specialist who has examined the student before the student returns to participation in physical education class activities. They should also participate in the return to play protocol that will be directed by the primary care provider, sports medicine physician or designated specialist who examined the student, and monitored by the school nurse.

MANAGEMENT OF CONCUSSION OCCURRING DURING A SCHOOL- SPONSORED SPORTING EVENT

- A. When a student athlete exhibits any signs or symptoms consistent with a concussion the athlete should be removed immediately from practice or competition and be evaluated by a team physician or athletic trainer. If the team physician or athletic trainer is not present, the coach should call 911 for any signs and symptoms listed below. The coach would then contact the parent/guardian and inform them of the situation. If the team physician or athletic trainer are present and evaluate that the student athlete requires an emergency response, 911 should be contacted and a parent/guardian informed of the situation.

Below is a list of signs and symptoms that would require calling for emergency management.

- One pupil larger than the other
 - Is drowsy or cannot be awakened
 - Worsening headache that does not resolve
 - Weakness, numbness, or decreased coordination
 - Repeated vomiting
 - Slurred speech
 - Seizure
 - Cannot recognize people or places
 - Becomes increasingly confused, restless, or agitated
 - Has unusual behavior
 - Loss of consciousness, even briefly
 - Blood or clear fluid leaking from ears, nose, mouth
 - Loss of extraocular eye movements
 - Skull or orbital depression
- B. If the coach removes the athlete from participation due to a suspected concussion that does not require emergency management and the athletic trainer or team physician is not immediately present, the coach will:
1. Contact the parent/guardian and give instructions that the student athlete should be evaluated by or have contacted and received instructions from a primary care provider, sports medicine physician, or the schools' designated athletic trainer by the end of the following non-holiday week-day.
 2. Instruct the parent/guardian to monitor the student athlete and if symptoms significantly worsen they should be evaluated in an emergency department immediately.
- C. If removed from practice or competition and the student-athlete is displaying signs and/or symptoms of a concussion, the student athlete should be cleared by a primary care provider, sports medicine physician, or athletic trainer with training in the evaluation and management of concussions prior to returning to physical activities including, but not limited to athletics participation.
- D. Student athletes who are evaluated for a concussion by the schools' designated athletic trainer or team physician will receive written and verbal instructions for appropriate care and follow up.

- E. Parents/guardians of athletes who are evaluated by the schools' designated athletic trainer or team physician for concussion will be contacted and provided information for appropriate care and follow up.
- F. The athletic trainer will notify the school nurse via email or phone call within 24 hours about any student-athlete that has been evaluated for a concussion. If this occurs on a Friday afternoon/evening, weekend, or holiday, the communication will be made prior to the next school day. The athletic trainer will share the nature of the injury and any signs or symptoms the student-athlete is experiencing.
- G. If an athlete requires extended academic adjustments for school because of ongoing symptoms associated with a concussion, it is strongly recommended that we receive a signature from a primary care provider, a sports medicine physician, or a designated specialist for academic adjustments, for returning to athletic or physician education activities, and for the schools designated athletic trainer to release them to full sports participation.
- H. If the student-athlete does not need academic adjustments, the athletic trainer will guide the athlete back to return to play using the return to play protocol. (See appendix – *UW Athletic Trainer Algorithm/Head Injury Flow Chart*).
- I. If the student-athlete is evaluated by a primary care provider/sports medicine physician or designated specialist they should share the written concussion management plan for students participating in athletics with the appropriate school staff (e.g. school nurse) and the school's designated athletic trainer. This plan should include information about academic/classroom adjustments. A standard form is highly recommended for this purpose (see appendix- *School Recommendations Following a Concussion*).

RETURN TO PLAY

The clearance to return to play is a medical decision. Clearance to return to play must be provided by a primary care provider, sports medicine physician, a designated specialist, or the schools designated athletic trainer as outlined in the previous section.

Students that suffer a concussion should follow a stepwise approach to return to sports and other physical activities. Each phase will typically take approximately 24 hours between each step. Progression through the full return to play protocol will take approximately one week. If the student experiences any symptoms either during activity or within the 24 hours following activity of a particular phase they should return to the previous phase. The athlete should have a resolution of symptoms prior to resuming activity. It is important that student athletes do not return to play prematurely because: 1) this may prolong their recovery, 2) there is an association

with early return to sport after a concussion and an increased probability of sustaining another concussion, and 3) if the athlete has not recovered from a recent concussion they could sustain a more serious “second impact” injury, possibly including severe brain injury or death.

- A. Most children and adolescents who have sustained a concussion will recover fully within three weeks.
- B. After symptoms have resolved, the schools designated athletic trainer may start the return to play protocol.
- C. If a primary care provider/sports medicine physician or designated specialist has provided a return to play protocol that is different from the MMSD or UW Health Sports Medicine return to play protocol, the substitute protocol will be utilized as long as it is without substantial differences to the MMSD and UW Health Sports Medicine protocol and does not by-pass any step-wise return to play protocol.
- D. If the athlete’s symptoms resolve in a timeframe that does not require academic adjustments and nothing unusual occurs during their return to play progression, the athletic trainer may clear the athlete to return to participation without referral to a primary care provider or sports medicine physician.
- E. If the athlete should need academic adjustments or they have significant/recurrent problems during the typical return to play progression, a referral to a primary care provider or sports medicine physician is strongly recommended. Written clearance from this provider is required prior to being cleared to return to play. The primary care provider, sports medicine physician or designated specialist may release the athlete to the care of the athletic trainer for final clearance to participation.
- F. A student athlete completing the Return to Play Protocol will have returned to their baseline symptoms without the use of medications to control symptoms specific to their concussion and have returned to their normal academic load. It is recognized that student athletes may have conditions for which they are already taking medications. These situations will be handled on a case by case basis.
- G. Generally, an athlete will progress through all six stages of UW Health/MMSD’s Return to Play Protocol before being cleared for competition. Given that each injury is unique and different sports have different demands, the timeframe for return may be adjusted based on the individual situation.
- H. A small percentage of student-athletes who have sustained a concussion will have a prolonged recovery with persistent symptoms. They may need academic adjustments for an extended period of time and there may be situations where they are allowed to participate in certain sports prior to the resolution of symptoms and prior to a return to their pre-concussion academic load. These situations will be reviewed on a case by case basis and directed by the recommendation of the student-athlete’s primary care provider, sports medicine physician or designated specialist.
- I. Documentation will be maintained for each student athlete who has a suspected/actual concussion. This documentation will include the medical clearance return to play provided by the primary care provider, sports medicine physician, designated specialist

or athletic trainer. At the high school, this documentation will be maintained by the athletic trainer.

RETURN TO PLAY PROTOCOL

A. Below are the 6 phases that are followed to return an athlete or student to physical activity. Typically, approximately 24 hours will separate each phase. The phases are used to test and monitor for the return of symptoms associated with concussions. Each injury is unique and different sports have different demands. Therefore, the timeframe for return may be adjusted based on the individual situation. For more explanation (See appendix – *UW Athletic Trainer Algorithm/Head Injury Flow Chart*).

PHASE 1: No activity.

PHASE 2: Low impact, non-strenuous, light aerobic activity for 5 to 10 minutes such as walking or riding a stationary bike.

PHASE 3: Moderate aerobic activity such as running or jumping rope for 15 to 20 minutes. No resistance training or weight lifting.

PHASE 4: Sport specific, non-contact activity. Moderate resistance /weight training.

PHASE 5: Full contact training drills and intense aerobic activity.

PHASE 6: Return to full activity without any restrictions.
(Consensus Statement of Concussion in Sport- Zurich, 2012)

IMPLEMENTATION of THE RETURN TO LEARN MANAGEMENT PLAN

A concussion is a brain injury and can significantly affect the brain's normal functioning. The symptoms experienced from a concussion can have a negative impact on a student's academic and classroom performance and behavior. Students who have sustained a concussion often do not have visual external evidence of their injury like other injuries such as swelling, needing crutches or a sling, or limping when walking. Therefore, it is often difficult for many school staff and the student's peers to fully understand the extent of dysfunction that the student may experience with a concussion. Further, every concussion is different. Some students may need to miss school to help heal the brain, while other students will be able to continue their work with minor academic adjustments.

To improve a student's recovery and to avoid or limit the symptoms the injured student may experience, a full "return to school" can be completed in up to 5 phases. Because symptoms are

different for each student, some students may not go through every step. The purpose of each step is to identify what the student can do without increasing symptoms that may delay recovery and avoiding “triggers” that can worsen symptoms.

RETURN TO LEARN FOLLOWING A CONCUSSION

Phases in Return to Learn Recovery

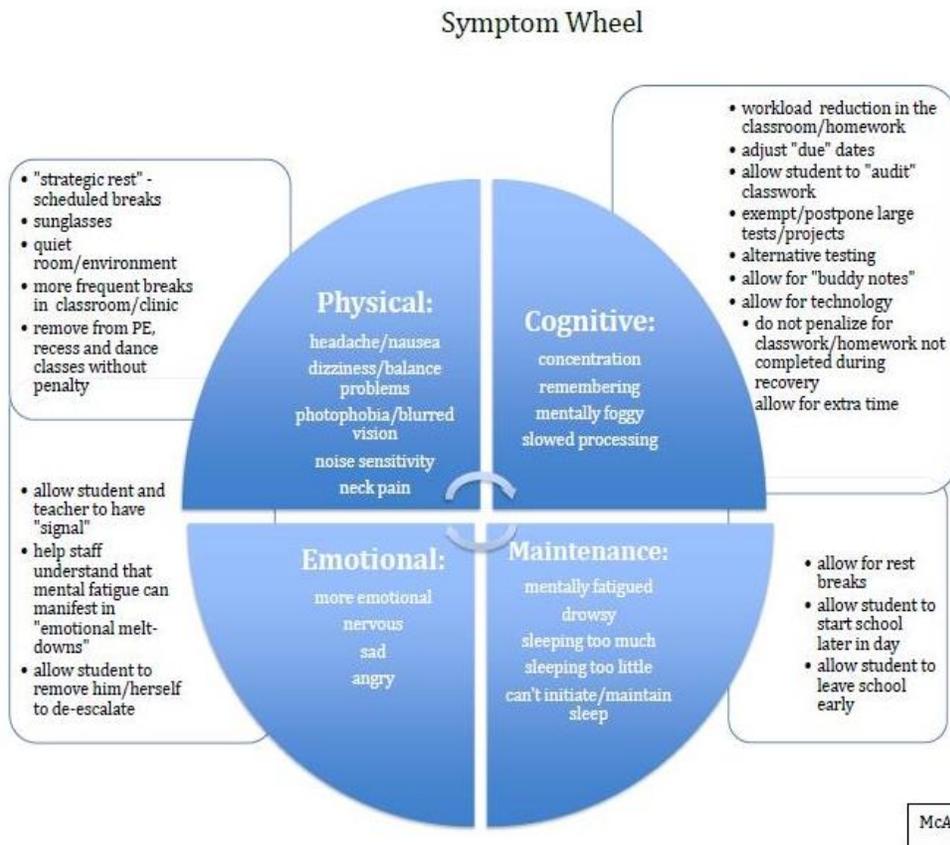
PHASE OF RECOVERY	TREATMENT	SCHOOL INTERVENTION
<p>PHASE 1: No School</p> <ul style="list-style-type: none"> • Student has a high level of symptoms 	<ul style="list-style-type: none"> • Physical and cognitive rest 	<ul style="list-style-type: none"> • Student typically not attending school • School nurse should contact parent/student and request medical documentation and inquire regarding symptom load • Recommend school nurse schedule a reentry meeting with the parent/student • School nurse will notify appropriate staff of student's concussion
<p>PHASE 2: Partial Day Attendance With Academic Adjustments</p> <ul style="list-style-type: none"> • Symptoms have decreased to a manageable level • Symptoms exacerbated by certain activities (e.g. sustained cognitive tasks) 	<ul style="list-style-type: none"> • Continued rest balanced with gradual return to school • Avoid activities that trigger symptoms 	<ul style="list-style-type: none"> • Student will be allowed partial day attendance • Recommend school nurse will meet with student upon his/her return • Student will focus on attending core classes • Teachers will emphasize class attendance and participation vs. homework • Strongly recommend teachers will institute classroom adjustments • Teachers will reduce/eliminate homework • Student will not be required to take tests • Student will be allowed rest periods in the health office for increased symptoms • School nurse will monitor student's recovery status, symptoms, and triggers. See <i>Post-Concussion Symptom Checklist</i> (appendix) • School nurse and/or counselor will monitor effectiveness of classroom adjustments

<p>PHASE 3: Full-day Attendance With Academic Adjustments</p> <ul style="list-style-type: none"> • Symptoms have decreased in number and severity • Symptoms may still be triggered by certain activities but these activities are tolerated for a longer period of time 	<ul style="list-style-type: none"> • Continue to balance rest and school • Gradually increase cognitive demands • Full day attendance 	<ul style="list-style-type: none"> • Teachers will assist student in prioritizing assignments/tests/projects • Students will participate in limited testing but no standardized testing • Teachers will continue academic adjustments but start to discontinue them as symptoms resolve • Teachers will gradually increase the amount of homework • Student will be allowed rest periods in health office for increased symptoms • School nurse will continue to monitor recovery status, symptoms, and symptom triggers. See <i>Post-Concussion Symptom Checklist</i> (appendix) • School nurse and/or counselor will monitor effectiveness of classroom adjustments
<p>PHASE 4: Full Day Attendance Without Academic Adjustments</p> <ul style="list-style-type: none"> • Symptoms have resolved or only mild and infrequent 	<ul style="list-style-type: none"> • All academic adjustments are discontinued as student is able to function without them 	<ul style="list-style-type: none"> • Teacher will assist student in creating a plan to complete missed work • School nurse will continue to monitor for any return of symptoms or other difficulties. See <i>Post-Concussion Symptom Checklist</i> (appendix) • School nurse will evaluate possibility for physical education participation
<p>PHASE 5: Full School and Extracurricular participation</p> <ul style="list-style-type: none"> • Symptoms have completely resolved 	<ul style="list-style-type: none"> • No interventions needed 	<ul style="list-style-type: none"> • Follow up as needed • Student should be back to baseline functioning

Academic Adjustments

The school nurse will email teachers a *Concussion Notification Form* (see appendix) when the student returns to school following a concussion. This form will contain basic information regarding concussions, as well as the Concussion Symptom Wheel and corresponding classroom adjustments that is discussed in greater detail below. It is important to remember that students have individual differences in the rate at which they recover from concussions. The Symptom Wheel (McAvoy, 2011) will assist the teacher as they begin to work with a student who has suffered from a concussion. The purpose of the Symptom Wheel is to help educators align concerns with solutions.

Teachers can do a great deal to aid in the healing of the concussion by “frontloading” academic adjustments for the concussed student. “Frontloading” academic adjustments refers to providing the majority of adjustments immediately following the injury and then weaning back on these adjustments over the next week or two as symptoms subside.



Symptom Wheel adapted from Colorado Department of Education Concussion Management Guidelines April 2014)

Signs and Symptoms of a Concussion, Implications and Interventions

Signs and Symptoms	Potential Implications for School	Interventions
Headache	<ul style="list-style-type: none"> -Most common symptom reported in concussions -Can distract the student from concussions -Can vary throughout the day and may be triggered by various exposures, such as fluorescent lighting, loud noises and focusing on tasks 	<ul style="list-style-type: none"> -Rest breaks in health office - scheduled or as needed -Promote good nutrition and sleep habits -Promote good hydration -Late start or early release -Remove from PE and recess without penalty

Dizziness/Lightheadedness	<ul style="list-style-type: none"> -May be injury to vestibular system -May make standing quickly or walking in crowded environment challenging 	
Visual symptoms: light sensitivity, double vision, blurry vision	<ul style="list-style-type: none"> -Often provoked by visual stimulus (rapid movement, videos, etc.) -Troubles with various aspects of the school building (slide presentations, movies, smart boards, computers, artificial lighting) -Difficulty reading and copying -Difficulty paying attention visual tasks 	<ul style="list-style-type: none"> -Dim lights in classroom or seat away from the window -Allow student to wear sunglasses or hat with a brim -Allow students to leave class early to avoid crowded halls during passing time
Noise sensitivity	<ul style="list-style-type: none"> -Troubles with various aspects of the school building (lunchroom, shop classes, music classes, physical education classes, hallways, organized sports practices) 	<ul style="list-style-type: none"> -Eat lunch in a quiet environment -Rest breaks in quiet/dark environment -Temporarily excuse from band/orchestra
Difficulty concentrating, remembering, slowed processing, or difficulty with organization	<ul style="list-style-type: none"> -Challenges learning new tasks and comprehending new materials -Difficulty with recalling and applying previously learned materials -Lack of focus in the classroom -Troubles with test taking -Troubles with standardized tests -Reduced ability to take driver's education classes safely 	<ul style="list-style-type: none"> -Provide teacher/class notes -Provide note taker or scribe -Allow technology -Check student understanding of directions -Seat student in front in classroom -Allow the use of fact sheets on tests -Provide for memory aides -Remove non-essential work/workload reduction -Do not penalize for work not completed during recovery phase -Shorten assignments -Break down large assignments -Extended time for work/exams -Multiple choice or oral exams -Give breaks between tasks -Create "to do lists"
Sleep disturbances	<ul style="list-style-type: none"> -Excess fatigue can hamper memory for new or past learning , and the ability to attend and focus -Insufficient sleep can lead to tardiness or excessive absences -Difficulty getting to sleep or frequent waking at night may lead to sleeping in class -Excessive napping due to fatigue may lead to further disruptions of the sleep cycle 	<ul style="list-style-type: none"> -Allow for rest breaks -Allow student to start school later in the day -Allow students to leave school early

Adapted from Halstead, M.E., McAvoy, K., Devore, C.D., Carl, R., Lee, M. Logan, K. (2013) Returning to Learning Following a Concussion. *Pediatrics*, 132(5) 948-957.

Formal Support Services for Students with Concussion

For most students, only temporary, informal, academic adjustments are needed as they recover from a concussion. However, a variety of formal support services may be available to assist a student who is experiencing a prolonged recovery. Some of these services may include more specialized medical intervention or a Multi-Tiered System of Support (MTSS).

Some students may be at risk for a prolonged recovery. Often times these are students whose symptoms do not improve or resolve after 3 weeks. For this group of students, a 504 plan evaluation should be seriously considered.

Multi-Tiered System of Support

Tier 1: Universal Level

Research determined that 80 to 90% of concussions resolve in 3 to 4 weeks (Collins et al., 2006). The majority of students with a concussion will respond positively to a well-orchestrated system of cognitive reduction, physical rest and academic adjustments in the general education classroom. These interventions provided at Tier 1 (Universal Level) are simple academic and classroom adjustments to the existing curriculum to support physical and cognitive rest.

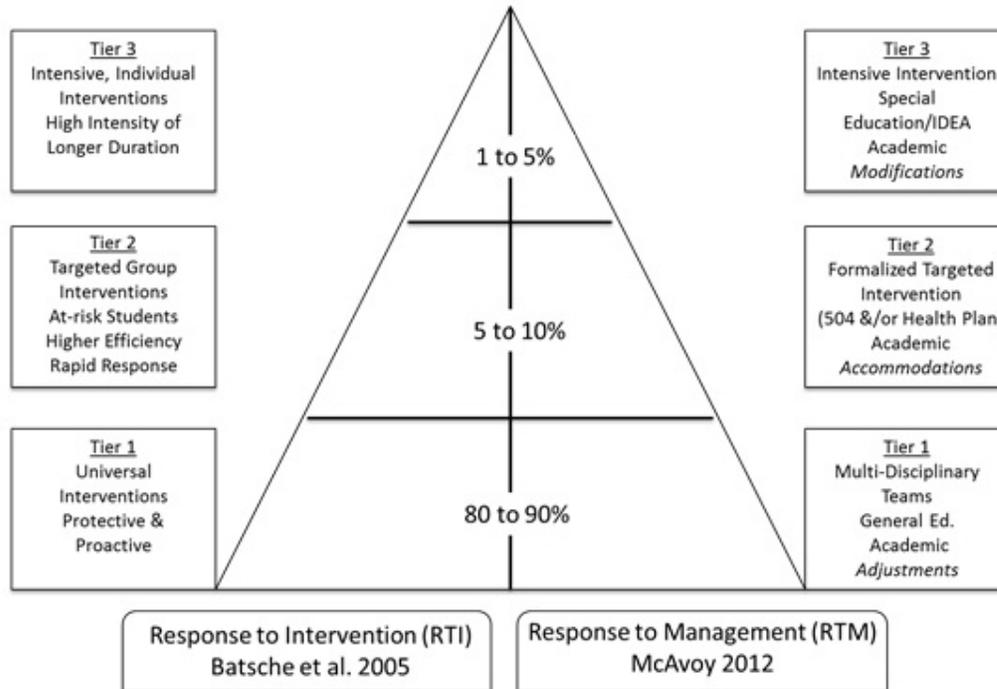
Tier 2: Targeted Interventions

With the MTSS model, the 10 to 20% of students who do not respond sufficiently to interventions at Tier 1 may need to be considered for “Tier 2: Targeted Interventions”. It is suggested that a multidisciplinary approach be utilized. In Tier 2, a more formalized academic plan may be needed such as a 504 Plan.

Tier 3: Intensive Interventions

At the peak of the MTSS model, 1 to 5% of students who do not adequately respond to concussion management efforts at Tier 1 and Tier 2 may need to be referred for an IEP. (McAvoy, 2012b)

RTI/RTM Concussion Pyramid, (McAvoy, 2012)



RESOURCES

[Brain 101 The Concussion Playbook: Concussion Management](http://www.orcasinc.com/products/brain-101/) Retrieved 5/3/2017 from <http://www.orcasinc.com/products/brain-101/>

[Colorado Department of Education: Concussion Management Guidelines April 2014](https://www.cde.state.co.us/healthandwellness/concussionguidelines7-29-2014-0) Retrieved 12/6/2017 from <https://www.cde.state.co.us/healthandwellness/concussionguidelines7-29-2014-0>

Consensus Statement of Concussion in Sport- The 4th International Conference on Concussion in Sport, held in Zurich, November 2012

Glang A, Mc Cart M, Koester MC, Kracke D, Chesnutt J, et al. (2016) The Oregon Concussion Awareness and Management Program: Interdisciplinary State Level Guidance in Concussion Management. *Ann Sports Med Res* 3(1): 1058.

Halstead, M.E., McAvoy, K., Devore, C.D., Carl, R., Lee, M. Logan, K. (2013) Returning to Learning Following a Concussion. *Pediatrics*, 132(5) 948-957.

HEADS UP to Brain Injury Awareness www.cdc.gov/headsup

McAvoy, K. (2012). Return to learning: Going back to school following a concussion. NASP Communique online. March/April

[Nationwide Children's Concussion Toolkit](http://www.nationwidechildrens.org/concussion-toolkit) Retrieved 5/3/2017 from <http://www.nationwidechildrens.org/concussion-toolkit>

Wisconsin Department of Public Instruction. [Guidelines for Concussion and Head Injury](https://dpi.wi.gov/sped/program/traumatic-brain-injury/concussion-guidelines). Retrieved 5/3/2017 from <https://dpi.wi.gov/sped/program/traumatic-brain-injury/concussion-guidelines>.

Appendices

UW Athletic Trainer Algorithm/Head Injury Flow Chart
School Recommendations Following Concussion
Teacher Concussion Notification Form
Acute Concussion Assessment Form
Post-Concussion Symptom Checklist
UW Health Sports Medicine Information Sheet Following a Concussion

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