

Concussion in Sport

Always Assess Airway, Breathing and Circulation

- ◆ All players who experience a concussion must be seen by a physician as soon as possible. A concussion is a brain injury.
- ◆ A concussion may involve loss of consciousness. However, a concussion most often occurs without a loss of consciousness.
- ◆ Mechanism: Blow to the head, face or jaw, or even elsewhere on the body. May also result from a whiplash effect to the head and neck.

Common Symptoms and Signs

- ◆ Symptoms and signs may have a delayed onset (may be worse later that day or even the next morning), so players should continue to be observed even after the initial symptoms and signs have returned to normal.

Symptoms

- ◆ Headache
- ◆ Dizziness
- ◆ Feeling dazed
- ◆ Seeing stars
- ◆ Sensitivity to light
- ◆ Ringing in ears
- ◆ Tiredness
- ◆ Nausea, vomiting
- ◆ Irritability
- ◆ Confusion, disorientation

Signs

- ◆ Poor balance or coordination
- ◆ Slow or slurred speech
- ◆ Poor concentration
- ◆ Delayed responses to questions
- ◆ Vacant stare
- ◆ Decreased playing ability
- ◆ Unusual emotions, personality change, and inappropriate behaviour

Caution: All players should consult a physician after a concussion. Coaches, trainers/safety people, players and parents should not attempt to treat a concussion without a physician's involvement.

Initial Response

- ◆ If there is loss of consciousness – Initiate Emergency Action Plan and call an ambulance. Assume possible neck injury.

Concussion

- ◆ Remove the player from the current game or practice
- ◆ Do not leave the player alone; monitor signs and symptoms
- ◆ Do not administer medication
- ◆ Inform the coach, parent or guardian about the injury
- ◆ The player should be evaluated by a medical doctor
- ◆ The player must not return to play in that game or practice



Return to Play Steps

◆ The return to play process is gradual, and begins after a doctor has given the player clearance to return to activity. If any symptoms/signs return during this process, the player must be re-evaluated by a physician. No return to play if any symptoms or signs persist. Remember, symptoms may return later that day or the next, not necessarily when exercising!

Step 1 No activity, only complete rest. Proceed to step 2 only when symptoms are gone.

Step 2 Light aerobic exercise, such as walking or stationary cycling. Monitor for symptoms and signs. No resistance training or weight lifting.

Step 3 Sport specific activities and training (e.g. skating).

Step 4 Drills without body contact. May add light resistance training and progress to heavier weights.

The time needed to progress from non-contact to contact exercise will vary with the severity of the concussion and the player. Go to step 5 after medical clearance.

Step 5 Begin drills with body contact.

Step 6 Game play.

Note: Players should proceed through return to play steps only when they do not experience symptoms or signs and a physician has given clearance. If symptoms or signs return, the player should return to the previous step, and be re-evaluated by a physician.

Never return to play if symptoms persist!

Prevention Tips

Players

- ◆ Make sure your helmet fits snugly and that the strap is fastened
- ◆ Get a custom fitted mouth guard
- ◆ Respect other players
- ◆ No hits to the head
- ◆ No hits from behind

Coach/Trainer/Safety Person/Referee

- ◆ Eliminate all checks to the head
- ◆ Eliminate all hits from behind
- ◆ Recognize signs and symptoms of concussion
- ◆ Inform and educate players about the risks of concussion

Education Tips

www.hockeycanada.ca

Smart Hockey: More Safety, More Fun! Injury Prevention Program
ThinkFirst Canada website (www.thinkfirst.ca)

Pashby Sport Safety Concussion website (www.drpushby.ca)
www.concussionsafety.com

**SPORT-RELATED CONCUSSION
GUIDELINES FOR THE COACH/ TRAINER**

What is a concussion?

A concussion is a brain injury that cannot be seen on x-rays or CT scans. It affects the way a person may think and remember things for a short time. Concussions can cause a variety of symptoms.

What are the symptoms and signs of concussion?

It is important to know that an athlete does not need to be knocked out (lose consciousness) to have had a concussion. A variety of problems may happen after a concussion, including:

Thinking Problems	Child's Complaints	Other Problems
<ul style="list-style-type: none"> • Does not know time, date, place, period of game, opposing team, score of game • General confusion • Cannot remember things that happened before and after the injury • Knocked out 	<ul style="list-style-type: none"> • Headache • Dizziness • Feels dazed • Feels “dinged” or stunned; “having my bell rung” • Sees stars, flashing lights • Ringing in the ears • Sleepiness • Loss of vision • Sees double or blurry • Stomachache/nausea 	<ul style="list-style-type: none"> • Poor coordination or balance • Blank stare/glassy eyed • Vomiting • Slurred speech • Slow to answer questions or follow directions • Easily distracted • Poor concentration • Strange or inappropriate emotions (ie. laughing, crying, getting mad easily) • Not playing as well

What causes a concussion?

Any blow to the head, face or neck, or a blow to the body which causes a sudden jarring of the head may cause a concussion (ie. a ball to the head, being checked into the boards in hockey).

What should you do if an athlete gets a concussion?

The athlete should stop playing the sport right away. He/she should not be left alone and should be seen by a doctor as soon as possible that day. If an athlete is knocked out, call an ambulance to take him/her to a hospital immediately. Do not move the athlete or remove athletic equipment like a helmet; wait for paramedics to arrive.

An athlete with a concussion should not go back to play that day, even if he/she says he/she is feeling better. Problems caused by a head injury can get worse later that day or night. He/she should not return to sports until he/she has been seen by a doctor.

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How long will it take for the athlete to get better?

The signs and symptoms of a concussion (see chart above) often last for 7-10 days but may last much longer. In some cases, children may take many weeks or months to heal. Having had previous concussions may increase the chance that a person may take longer to heal.

How is a concussion treated?

It is very important that an athlete does not go back to sports if he/she has any concussion symptoms or signs. Return to sport and activity must follow a step-wise approach:

- 1) No activity, complete rest. Once back to normal and cleared by a doctor, go to step 2.
- 2) Light exercise such as walking or stationary cycling, for 10-15 minutes.
- 3) Sport specific activity (ie. skating in hockey, running in soccer), for 20-30 minutes.
- 4) "On field" practice such as ball drills, shooting drills, and other activities with NO CONTACT (ie. no checking, no heading the ball, etc.).
- 5) "On field" practice with body contact, *once cleared by a doctor.*
- 6) Game play.

Note: *Each step must take a minimum of one day. If an athlete has any symptoms of a concussion (e.g. headache, feeling sick to his/her stomach) that come back either with activity, or later that day, he/she should stop the activity immediately and rest for 24 hours. The athlete should be seen by a doctor and cleared before starting the step wise protocol again.*

Each step must take a *minimum* of one day, since concussion symptoms may be felt later in the day after activity.

When can an athlete with a concussion return to sport?

It is very important that an athlete not play any sports if he/she has any signs or symptoms of concussion. The athlete must rest until he/she is completely back to normal. When he/she has been back to normal and has been seen by a doctor, he/she can then go through the steps of increasing activity described above. When the athlete has progressed through these steps with no symptoms or problems, and has received clearance from a doctor, he/she may return to play. If you are unsure if an athlete should play, remember...***when in doubt, sit them out.***





UPMC Sports Medicine

Sports Concussion Program

Part of University of Pittsburgh Medical Center

Concussion Signs and Symptoms Evaluation

Signs observed by staff

- appears to be dazed or stunned
- is confused about assignment
- forgets plays
- is unsure of game, score, or opponent
- moves clumsily
- answers questions slowly
- loses consciousness
(even temporarily)
- shows behavior or personality change
- forgets events prior to hit
(retrograde)
- forgets events after hit
(anterograde)

Symptoms reported by athlete

- headache
- nausea
- balance problems or dizziness
- double or fuzzy vision
- sensitivity to light or noise
- feeling sluggish
- feeling "foggy"
- change in sleep pattern
- concentration or memory problems

Symptoms may worsen with exertion.

Athlete should not return to play until symptom-free.

For more information

800-533-UPMC (8762)

On-field Cognitive Testing

Orientation

Ask the athlete the following questions.

What stadium is this?

What month is it?

What city is this?

What day is it?

Who is the opposing team?

Anterograde amnesia

Ask the athlete to repeat the following words.

Girl, dog, green

Retrograde amnesia

Ask the athlete the following questions.

What happened in the prior quarter/period?

What do you remember just prior to the hit?

What was the score of the game prior to the hit?

Do you remember the hit?

Concentration

Ask the athlete to do the following.

Repeat the days of the week backward (starting with today).

Repeat these numbers backward:

63 *(36 is correct)*

419 *(914 is correct)*

Word list memory

Ask the athlete to repeat the three words from earlier. (Girl, dog, green)

***Any failure should be considered abnormal.
Consult a physician following a suspected concussion.***

ACUTE CONCUSSION EVALUATION (ACE)

CARE PLAN

Gerard Gioia, PhD¹ & Micky Collins, PhD²

¹Children's National Medical Center
²University of Pittsburgh Medical Center

Patient Name: _____

DOB: _____ Age: _____

Date: _____ ID/MR# _____

Date of Injury: _____

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to it can also prevent further injury.

Rest is the key. You should not participate in any high risk activities (e.g., sports, physical education (PE), riding a bike, etc.) if you still have any of the symptoms below. It is important to limit activities that require a lot of thinking or concentration (homework, job-related activities), as this can also make your symptoms worse. If you no longer have any symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. Children and teenagers will need help from their parents, teachers, coaches, or athletic trainers to help monitor their recovery and return to activities.

Today the following symptoms are present (circle or check).

_____ No reported symptoms

Physical		Thinking	Emotional	Sleep
Headaches	Sensitivity to light	Feeling mentally foggy	Irritability	Drowsiness
Nausea	Sensitivity to noise	Problems concentrating	Sadness	Sleeping more than usual
Fatigue	Numbness/Tingling	Problems remembering	Feeling more emotional	Sleeping less than usual
Visual problems	Vomiting	Feeling more slowed down	Nervousness	Trouble falling asleep
Balance Problems	Dizziness			

RED FLAGS: Call your doctor or go to your emergency department if you suddenly experience any of the following

Headaches that <u>worsen</u>	Look <u>very</u> drowsy, can't be awakened	Can't <u>recognize</u> people or places	Unusual behavior change
Seizures	<u>Repeated</u> vomiting	Increasing confusion	Increasing irritability
Neck pain	Slurred speech	Weakness or numbness in arms or legs	Loss of consciousness

Returning to Daily Activities

1. Get lots of rest. Be sure to get enough sleep at night- no late nights. Keep the same bedtime weekdays and weekends.
2. Take daytime naps or rest breaks when you feel tired or fatigued.
3. **Limit physical activity as well as activities that require a lot of thinking or concentration. These activities can make symptoms worse.**
 - Physical activity includes PE, sports practices, weight-training, running, exercising, heavy lifting, etc.
 - Thinking and concentration activities (e.g., homework, classwork load, job-related activity).
4. Drink lots of fluids and eat carbohydrates or protein to maintain appropriate blood sugar levels.
5. **As symptoms decrease, you may begin to gradually return to your daily activities. If symptoms worsen or return, lessen your activities, then try again to increase your activities gradually.**
6. During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
7. Repeated evaluation of your symptoms is recommended to help guide recovery.

Returning to School

1. If you (or your child) are still having symptoms of concussion you may need extra help to perform school-related activities. As your (or your child's) symptoms decrease during recovery, the extra help or supports can be removed gradually.
2. Inform the teacher(s), school nurse, school psychologist or counselor, and administrator(s) about your (or your child's) injury and symptoms. School personnel should be instructed to watch for:
 - Increased problems paying attention or concentrating
 - Increased problems remembering or learning new information
 - Longer time needed to complete tasks or assignments
 - Greater irritability, less able to cope with stress
 - Symptoms worsen (e.g., headache, tiredness) when doing schoolwork

~Continued on back page~

Returning to School (Continued)

Until you (or your child) have fully recovered, the following supports are recommended: *(check all that apply)*

- No return to school. Return on (date) _____
- Return to school with following supports. Review on (date) _____
- Shortened day. Recommend ____ hours per day until (date) _____
- Shortened classes (i.e., rest breaks during classes). Maximum class length: ____ minutes.
- Allow extra time to complete coursework/assignments and tests.
- Lessen homework load by ____%. Maximum length of nightly homework: ____ minutes.
- No significant classroom or standardized testing at this time.
- Check for the return of symptoms (use symptom table on front page of this form) when doing activities that require a lot of attention or concentration.
- Take rest breaks during the day as needed.
- Request meeting of 504 or School Management Team to discuss this plan and needed supports.

Returning to Sports

1. **You should NEVER return to play if you still have ANY symptoms** – (Be sure that you do not have any symptoms at rest and while doing any physical activity and/or activities that require a lot of thinking or concentration.)
2. Be sure that the PE teacher, coach, and/or athletic trainer are aware of your injury and symptoms.
3. It is normal to feel frustrated, sad and even angry because you cannot return to sports right away. With any injury, a full recovery will reduce the chances of getting hurt again. It is better to miss one or two games than the whole season.

The following are recommended at the present time:

- Do not return to PE class at this time
- Return to PE class
- Do not return to sports practices/games at this time
- Gradual** return to sports practices under the supervision of an appropriate health care provider (e.g., athletic trainer, coach, or physical education teacher).
 - Return to play should occur in **gradual steps** beginning with aerobic exercise only to increase your heart rate (e.g., stationary cycle); moving to increasing your heart rate with movement (e.g., running); then adding controlled contact if appropriate; and finally return to sports competition.
 - Pay careful attention to your symptoms and your thinking and concentration skills at each stage of activity. Move to the next level of activity only if you do not experience any symptoms at the each level. If your symptoms return, let your health care provider know, return to the first level, and restart the program gradually.

Gradual Return to Play Plan

1. No physical activity
2. Low levels of physical activity (i.e., *symptoms do not come back during or after the activity*). This includes walking, light jogging, light stationary biking, light weightlifting (lower weight, higher reps, no bench, no squat).
3. Moderate levels of physical activity with body/head movement. This includes moderate jogging, brief running, moderate-intensity stationary biking, moderate-intensity weightlifting (reduced time and/or reduced weight from your typical routine).
4. Heavy non-contact physical activity. This includes sprinting/running, high-intensity stationary biking, regular weightlifting routine, non-contact sport-specific drills (in 3 planes of movement).
5. Full contact in controlled practice.
6. Full contact in game play.

*Neuropsychological testing can provide valuable information to assist physicians with treatment planning, such as return to play decisions.

This referral plan is based on today's evaluation:

- Return to this office. Date/Time _____
- Refer to: Neurosurgery ____ Neurology ____ Sports Medicine ____ Psychiatrist ____ Other ____
- Refer for neuropsychological testing
- Other _____

ACE Care Plan Completed by: _____ MD RN NP PhD ATC

***SPORT-RELATED CONCUSSION:
GUIDELINES FOR PARENTS***

What is a concussion?

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What are the symptoms and signs of concussion?

It is important to know that your child does not need to be knocked out (lose consciousness) to have had a concussion. A variety of problems may happen after a concussion, including:

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What causes a concussion?

Any blow to the head, face or neck, or a blow to the body which causes a sudden jarring of the head may cause a concussion (ie. a ball to the head, being checked into the boards in hockey).

What should you do if your child gets a concussion?

Your child should stop playing his/her sport right away. He/she should not be left alone and should be seen by a doctor as soon as possible that day. If your child is knocked out, call an ambulance to take him/her to a hospital immediately. Do not move your child until the paramedics arrive.

How long will it take for my child to get better?

The signs and symptoms of concussion (see above) often last for 7-10 days but may last much longer. In some cases, children may take many weeks or months to heal. Having had previous concussions may increase the chance that a child may take longer to heal.

How is a concussion treated?

The most important treatment for a concussion is rest. The child should not exercise, go to school or do any activities that may make him/her worse, like riding a bike, play wrestling with brothers/sisters/friends, video games, or working on the computer. If your child goes back to activities before he/she is completely better, he/she is more likely to get worse, and to have symptoms longer. *Even*

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though it is very hard for an active child to rest, this is the most important step. Once your child is completely better at rest, he/she can start a step-wise increase in activities (see “**When can my child return to sport?**”). It is important that your child is seen by a doctor before he/she begins the steps needed to return to activity, to make sure he/she is completely better. If possible, your child should be seen by a doctor with experience in treating concussions.

When can my child return to school?

Sometimes children who have a concussion may find it hard to concentrate in school and may get a worse headache or feel sick to their stomach if they are in school. Children should stay home from school if their symptoms get worse while they are in class. Once they feel better, they can try going back to school at first for half days and if they are okay with that, then they can go back full time.

When can my child return to sport?

It is very important that your child not go back to sports if he/she has any concussion symptoms or signs.

Return to sport and activity must follow a step-wise approach:

- 1) No activity, complete rest. Once back to normal and cleared by a doctor, go to step 2.
- 2) Light exercise such as walking or stationary cycling, for 10-15 minutes.
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- 5) “On field” practice with body contact, *once cleared by a doctor.*
- 6) Game play.

Note: *Each step must take a minimum of one day.* If your child has any symptoms of a concussion (e.g. headache, feeling sick to his/her stomach) that come back either during activity, or later that day, your child should stop the activity immediately and rest for 24 hours. Your child should be seen by a doctor and cleared again before starting the step wise protocol again.

When should I take my child to the doctor?

Every child who gets a head injury should be seen by a doctor as soon as possible. You should take him/her back to the doctor **IMMEDIATELY** if, after being told your child has a concussion, he/she has worsening of symptoms such as:

1. being more confused
2. has a headache that is getting worse
3. vomits more than once
4. doesn't wake up
5. has any trouble walking
6. has a seizure
7. has strange behaviour

Problems caused by a head injury can get worse later that day or night. The child should not be left alone and should be checked throughout the night. If you have any concerns about the child's breathing or how he/she is sleeping, wake him/her up. Otherwise, let him/her sleep. If he/she seems to be getting worse, you should see your doctor immediately. **No child should go back to sport until they have been cleared to do so by a doctor.**