HEAD INJURY CLINIC

A GUIDE TO CONCUSSIONS & MILD TRAUMATIC BRAIN INJURIES
Concussions and Traumatic Brain Injuries

Concussions are a form of traumatic brain injury. They usually are not life-threatening but their effects can be very serious. They can be caused by a bump or blow to the head or body causing the brain to move back and forth in the skull. This movement can change how the brain usually functions. A person doesn’t have to play sports to get a concussion. They can happen in a car accident or while playing with friends at recess or at home.

Concussion signs and symptoms can show up right after the injury, but sometimes do not appear until hours or even days afterwards. Some concussions will develop into “Post-concussion syndrome” which is a complex disorder in which a number of post-concussion symptoms — such as headaches and dizziness — last for weeks and sometimes months after the injury that caused the initial injury.

A diverse group of professionals at Cincinnati Children’s work together to improve evidence-based care and outcomes for all children with head injuries across the region.

To schedule an appointment with one of these providers and talk to the Children’s staff please call 513-803-HEAD(4323).

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Common signs and symptoms of concussions

Every child may have different signs and symptoms with a concussion. Symptoms may not show up at the time of injury. It may take hours or even days for signs and symptoms to appear. It is also normal for a child to have different signs and symptoms during the healing process.

What is a concussion?

A concussion is an injury to the brain. It is sometimes called a traumatic brain injury or closed head injury. Concussions usually are not life threatening, but should be taken very seriously.

How can a person get a concussion?

Inside the skull, the brain is floating in cerebral spinal fluid. This fluid acts like a shock absorber to help protect the brain. When a person gets hit in the head, the brain can move. If the hit is hard enough, the brain can hit the walls of the skull, resulting in a concussion. A person can also get a concussion by a hard, indirect blow to the neck or body. A hit to the neck or body can cause a whiplash effect, causing the brain to move.
How are concussions diagnosed?

Doctors use a wide variety of tests to evaluate and diagnose patients who may have a concussion. These tests may include testing their memory, vision, concentration, hearing, balance, coordination, strength, sensation, and reflexes. Not all head injuries require imaging like a CT scan or MRI.

How do you treat a concussion?

Rest for the first few days after injury is the best treatment for a child with a concussion. This includes resting the brain and body. This can be very frustrating and boring for both you and your child, but it is needed to help your child heal. Your child may need to stay home from school for a brief period of time to help promote healing. Your child should not take part in any physical activities. Make sure your child is drinking plenty of water and eating healthy, well balanced meals. Your child should stay away from drinking coffee, energy drinks, or pop-soda, candy and junk food. (See “Recommendations for return daily and school activities after a concussion” table for a description of the expected recovery stages.)

Can I give my child pain medicine?

Do not give your child any medicine that can make them sleepy, such as cold medicine, energy medicines, or medicine for itching, unless told to by your child’s doctor.

You can give your child acetaminophen (Tylenol® or less costly store brands) for pain if advised by your child’s doctor. Follow the directions on the box or ask your child’s doctor how much medicine to give. Do not give your child more than 5 doses of acetaminophen in a 24-hour period. Do not give acetaminophen to babies less than 3 months of age without your doctor’s order.

If advised by your child’s doctor, you may give your child ibuprofen (Motrin®, Advil®, or other less costly store brands). Follow the directions on the box or ask your doctor how much medicine to give. Do not give ibuprofen to babies less than 6 months of age without a doctor’s order. If your child has kidney or bleeding problems, talk with your child’s doctor before giving ibuprofen. Give this medicine with food or milk to decrease stomach upset.

When should I call the doctor?

Call your child’s doctor if your child has any new symptoms that your doctor does not already know about, or if symptoms get worse, such as:

- Headache that worsens for no reason and does not get better with acetaminophen or ibuprofen
- Clear fluid or blood from the nose or ear
- Scalp swelling that gets bigger
- A seizure
- Is hard to wake up

Common signs and symptoms include one or more of the following:

- Headache
- Nausea or vomiting
- Sensitivity to light or noise
- Numbness or tingling anywhere in the body
- Being really tired or drowsy
- Dizziness
- Ringing in the ears
- Double or blurred vision
- Loss of consciousness
- Loss of balance or trouble walking
- Being irritable or more fussy than usual
- Feeling more emotional, likely sad or nervous
- Change in sleeping pattern
- Feeling in a fog or not like self
- Trouble thinking clearly or having a hard time concentrating and remembering
Steps for returning to school & daily activities after a brain injury/concussion

This outline shows a typical recovery you can expect following your child's concussion. All children are different. If you have any questions or concerns about your child’s recovery, call the Head Injury Clinic: 513-803-HEAD (4323).

Unless your doctor tells you otherwise, most children can return to school gradually after a few days of healing. In general, if your child’s symptoms are getting better, try going for one or two hours of school in 1 to 2 days. See the following guidelines for return to school. If your child is school age, talk with the school nurse or health care services coordinator to make a plan for your child’s return.

- Repeated vomiting
- Acts differently than usual such as if he or she does not play, acts fussy or seems confused
- Has weakness in the arms or legs or does not move them as usual
- Cannot recognize people or places
- Passes out

Also call if you have any questions or concerns about how your child looks or feels.

When can my child return to school or daycare after a concussion?

This step usually ends 2–5 days after injury
Progress to the next stage when your child starts to improve, but s/he still has many symptoms

Walking short distances to get around is okay. No exercise of any kind.

This step usually ends 3–10 days after injury. Your child may still have some symptoms but they are improving

Light physical activity, like walking. No strenuous physical activity or contact sports.

This step usually ends 5–14 days after injury. Your child can attend full days of school without symptoms

Light physical activity, like walking. No strenuous physical activity or contact sports.

This step usually ends 7–28 days after injury. Your child has no symptoms, without medication

No strenuous physical activity or contact sports but "Return to Play" Guidelines can be started if 24 hours AND a full school day is completed with no symptoms.

Brain Rest

Rest in a dark, quiet area. Sleep as much as needed. Drink plenty of fluids and eat healthy foods. Avoid “screen time” (text, computer, cell phones). Avoid video games and TV.

SCHOOL ACTIVITIES

No School. No homework or take-home tests. Avoid reading and studying.

PHYSICAL ACTIVITIES

Gradually return to school. Start with a few hours or half days of school. Do not take tests or quizzes. Use preprinted class notes. Complete only necessary assignments. Limit homework to 20–30 minutes.

Normal “screen time” (2 hours per day recommended). Return to normal Social Activity. Continue healthy sleep and nutrition habits. Nap if needed 20–30 minutes.

Attend full days of school. Go to all classes. Complete all assignments and make a plan to finish any additional make-up work. Receive extra time to complete missed work.

Return to normal home and social activities.

Return to normal school schedule and course load.

Complete “Guidelines for Return to Play” before returning to strenuous physical activity or contact sports.

Full Recovery

Normal activity with supervision. This step usually ends 3–10 days after injury. Your child may still have some symptoms but they are improving

This step usually ends 5–14 days after injury. Your child can attend full days of school without symptoms

This step usually ends 7–28 days after injury. Your child has no symptoms, without medication

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### Recommended steps for return to physical activity after a concussion

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
<th>Sports</th>
<th>Child Specific</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No physical activity if symptoms exist (this stage may take days or weeks).</td>
<td>Complete physical rest.</td>
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<td>Symptom free recovery.</td>
</tr>
<tr>
<td>1</td>
<td>Light aerobic activity. (walking, swimming, stationary bike. No weight lifting.</td>
<td>10–15 minutes of exercise</td>
<td>Independent quiet play or with a parent.</td>
<td>Slightly increase breathing rate.</td>
</tr>
<tr>
<td>2</td>
<td>Progress aerobic activity &amp; sport-specific exercise.</td>
<td>20–30 minutes of low risk activity: running drills, swimming drills.</td>
<td>Supervised play. Low-risk activities such as dribbling a ball or playing catch.</td>
<td>Increase breathing rate. Increase attention and coordination.</td>
</tr>
<tr>
<td>3</td>
<td>Non-contact training drills. May start progressive weight training.</td>
<td>Progress to more complex training drills. Participate in a full practice but must avoid any contact. Participate in agility drills run/jump as tolerated.</td>
<td>Play freely but must avoid any contact. Run and jump as able.</td>
<td>Mimic the sport or free play without risk of head injury.</td>
</tr>
<tr>
<td>4</td>
<td>Full contact activities, except game play.</td>
<td>Participate in a full practice, including contact. No game play.</td>
<td>Normal activity with adult supervision. Full return to physical education</td>
<td>Build confidence. Assess skills.</td>
</tr>
<tr>
<td>5</td>
<td>Return to normal game play.</td>
<td>Return to normal game play.</td>
<td>Return to normal activities.</td>
<td>No restrictions.</td>
</tr>
</tbody>
</table>

### When can my child return to physical activity and sports after a concussion?

Your child must **STOP** all sports and physical activities at first, including physical education class, until they have no symptoms. **WAIT** for the doctor’s okay before letting your child return to sports and physical activities. This is not only important to help the brain and body rest, but it also protects their brain from another injury. Under direction of your doctor, your child can slowly return to sports and physical activities.

Your child must return to normal school work and studies before returning to game play. (See “Recommendations for return to physical activity after a concussion” table for a description of the expected recovery stages.)

Almost all children return to their normal self as well as their normal daily activities including school, sports, and other extracurricular activities without any problems.

These are the 5 steps your child should complete when returning to physical activity. Your child should be symptom-free for at least 24 hours before beginning the return to physical activity progression. If you have any questions or concerns, please call your doctor or the Head Injury Clinic at 513-803-HEAD (4323).

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**GET HEALTH CARE PROVIDER’S CLEARANCE/APPROVAL BEFORE MOVING ONTO STEPS 4 & 5**

Symptom free recovery.
How can I prevent my child from having another concussion?

Avoid activities that put your child or teen at risk for another head injury soon after the first one. Examples include things like climbing trees, riding a bike or skateboard, or driving a car.

Follow the guidelines below to help protect your child.

**Babies**
- Always make sure that your baby or child rides in an approved child safety seat or booster seat each time he travels in a vehicle.
- Never place a baby on a chair, table or other high place while they are in a car seat or baby carrier.
- Use the safety straps on changing tables, grocery carts and high chairs.
- Don’t allow children to carry your baby.
- Do not use baby walkers that have wheels. These can tip over and cause harm. Use a baby activity center without wheels instead.

**Toddlers**
- Childproof your home to protect your child from falls.
- Secure large pieces of furniture, TVs and appliances to the floor to prevent them from tipping over on your child. Use anti-tip brackets if needed.
- Lock windows and screens. On upper floors, install safety bars that can keep your child from falling out of windows, but can be removed in case of fire.
- Use safety gates at the top and bottom of stairs until
your child can go up and down safely on their own. Keep stairs free of clutter.

- Make sure your toddler wears an approved bike helmet and sits in an approved seat when riding on a bike with you.

**Children**

- Watch your child closely at the playground.
- Make sure play equipment is in good working order.
- The playground surface should be made of at least 12 inch deep shredded rubber, mulch, or fine sand. Avoid harder surfaces like asphalt, concrete, grass and soil.

**Older children and teens**

- Make sure your child wears a seatbelt every time they ride in a vehicle. Children under 13 years of age are safer in the back seat.
- Make sure your child wears the correct helmet when riding a bike, skateboard or takes part in other active sports.

- All-terrain vehicles (ATVs) should only be used by teens age 16 years or older. They need to wear a motorcycle helmet and should never have a passenger on the ATV with them.

Common **MYTHS** associated with concussions:

**Myth:** Your child should be woken up every few hours after a concussion to check symptoms

**Truth:** To help your child’s brain heal, they need as much sleep as possible. Waking your child up every few hours disrupts this. There is no need to wake your child to check for symptoms unless your child’s doctor asks that you do so.

**Myth:** My child’s CT or MRI scan was negative. This means that my child does not have a concussion.

**Truth:** MRIs and CT scans are used to detect structural damage. With concussions, there typically isn’t any structural damage to the brain, unless there is another issue besides a concussion, such as a bleed on the brain. When a child has a concussion, the damage to the brain usually occurs at the cellular and chemical levels. These levels cannot be seen on a MRI or CT scans.

**Myth:** A person has to lose consciousness or blackout to have a concussion.

**Truth:** Most of the people who are diagnosed with a concussion do not lose consciousness or black out. Only about 1 out of every 10 people who are diagnosed with a concussion actually lose consciousness.

**Myth:** Children recover from concussions faster than adults.

**Truth:** Since the brains of children and teenagers are still growing, their brains take longer to heal when compared to adults.

**Myth:** Concussions only happen to boys who play football.

**Truth:** Concussions can happen in any sport, to boys and girls. Concussions also happen to people other than those who play sports. People can get a concussion after being in a car accident or even falling down the stairs and hitting their head.
At Cincinnati Children’s we are all dedicated to treating all head injuries regardless of severity or cause. In addition to the work to educate and help prevent head injuries, the following help to treat, educate and rehab our patients to a full recovery.

**SPORTS MEDICINE:** Offers young athletes a state-of-the-art resource for sports injury care, sports injury prevention, performance training, research and education. The sports medicine team works with your child’s doctor to offer seamless, sports-focused healthcare services to help young athletes be the safest and best they can be.

**PHYSICAL MEDICINE AND REHABILITATION:** Kids from all over the world come to Cincinnati Children’s, where our specialists can help families cope with physically disabling conditions or navigate life after a traumatic injury. Our rehabilitation team coordinates an individualized treatment plan to meet your child’s medical, behavioral, educational and social needs.

**EMERGENCY DEPARTMENT:** Provides emergency care for all children within the hospital’s service area and offers education and support for emergency crews in the field.

**NEUROLOGY:** Since its founding in 1972, the Division of Neurology at has become one of the nation’s premiere centers for education, research and treatment of pediatric neurological disorders. We annually see more than 23,000 patients for conditions such as epilepsy, headache, cerebral palsy, and neurometabolic, neuro-oncologic, neurobehavioral and neurodevelopmental disorders.

**BEHAVIORAL MEDICINE AND NEUROPSYCHOLOGY:** Neuropsychologists are specially trained experts in understanding how behavior, emotions, learning and development can be affected by an illness or injury. The neuropsychologist will also talk to you about the things you, your child and the school need to know for a smooth recovery. Pediatric psychologists are experts in helping children with medical problems and health conditions. Our pediatric psychologists provide education and treatment to help your child manage pain and cope with changes or emotions after an illness or injury.

**TRAUMA:** Has as a mission to eliminate injury as the leading cause of death and illness among children by working to prevent injuries, provide high quality injury care and conduct research on injuries.

In addition to these divisions, depending upon the severity of the injury, many more experts will work to treat you child after a brain injury from Neurosurgeons to Physical and Speech Therapists. To schedule an appointment or speak to the clinic staff call 513-803-HEAD (4323).