

A concussion is an injury that disrupts normal brain function and is suspected in anyone who has a hit to the head, face, neck or body and reports concussion symptoms or exhibits visual signs of a suspected concussion. A person with a suspected concussion should be removed from the activity immediately and requires a medical assessment by a doctor or nurse practitioner to avoid another injury and confirm the diagnosis of a concussion.

Symptoms of concussion

Physical, cognitive (thinking) and emotional symptoms are expected after a concussion. Some symptoms show up right away and others may appear 1-2 days later. Most people do not lose consciousness after a concussion. Examples of concussion symptoms:

- difficulty concentrating, learning or with memory
- headache
- nausea
- lack of energy
- dizziness
- loss of balance
- sensitivity to light and sound
- changing in sleep patterns
- mood changes

Red flag symptoms

Red flag symptoms may indicate a more serious head injury and may appear immediately or within a few hours or 1-2 days after the head injury. If any of the following symptoms are observed after a head injury, an urgent medical assessment at the nearest emergency department is required:

- severe or increasing headache
- neck pain or tenderness
- double vision
- weakness or numbness in arms/legs
- seizure or convulsions
- loss of consciousness
- deteriorating state of consciousness
- repeated vomiting
- increasingly restless, agitated or combative state
- slurred speech

How long does it take to get better?

Most people recover completely from a concussion within 2-4 weeks. During the medical examination, your doctor can determine if you have a higher risk of experiencing a prolonged recovery (4 weeks or longer) from a concussion. People may recover faster through early treatment by specialized concussion care teams and with prescribed aerobic exercise.

Physical and mental rest: the first 1-2 days (at most) after concussion

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| DO: | AVOID: |
| <ul style="list-style-type: none">● take part in usual everyday activities.● very light physical activity as tolerated (gentle yoga, stretching, short walks).● increase rest periods, but limit sleep during the day to improve the quality of sleep at night | <ul style="list-style-type: none">● activities that have a head injury risk (for example, street hockey or cycling).● screened devices as they may make symptoms worse in the initial days● complete rest for more than 1-2 days after a concussion as it may prolong recovery |

Returning to activities and school (start 1-2 days after concussion)

Gradually start light physical activities that increase your heart rate like walking or biking on a stationary bike even if symptoms are present.

Follow the return to activity and school protocol steps below to safely increase the level of non-contact activities as tolerated, with the goal of avoiding prolonged rest.

Avoid all activities with a risk of falling, body contact or a new head injury.

You should never return to gameplay/scrimmages or full contact sports while still having symptoms. Medical clearance from a doctor is required before full-contact sports or higher risk activities such as downhill skiing or gymnastics.

Medical clearance is not required to return to school. The return to school steps should be started as soon as symptoms can be tolerated. Temporary leave of absence from school may be needed for a few days or up to a week, but it is important to get back to school as soon as possible.

Headaches

Reduce your exposure to things trigger more painful headaches, such as not getting enough sleep, loud noise or computers. It is ok if you get a mild headache that you can tolerate if it allows you to participate in important activities such as school and/or social events. Keep a diary of your headaches and review with your doctor. Include things like:

- time of day
- how long the headache lasted and triggers (like foods or activities)
- how painful it was (on a scale of 0-10)
- other symptoms (like nausea or vomiting)
- what helped or didn't help

Most post-concussion headaches get better over time and prescription medications are not usually needed. If needed, you may give Acetaminophen (Tylenol®) every four hours and/or Ibuprofen (Motrin® or Advil®) every 6-8 hours for the first week following the injury. Remember that using ibuprofen or acetaminophen more than 3 days per week after the first week can cause medication-overuse and rebound headaches.

Information to ask before leaving the doctor's office or Emergency Department

- Overview of what to expect during recovery
- Ask your doctor if you would benefit from a referral to an interdisciplinary concussion care clinic
- How and when to make a gradual return-to-school and low-risk physical activities
- Warning signs for when to go to the hospital for an emergency medical exam
- Strategies for modifying activity and managing symptoms
- When you can expect to get medical clearance to participate in full-contact sports or high-risk activities
- Information on when to make a follow-up medical appointment

Returning for a follow-up medical exam

A follow-up medical exam with a family doctor or nurse practitioner is suggested for all concussion patients at 1-2 weeks after a concussion or sooner if you are at higher risk for prolonged symptoms. An immediate medical exam is required if new "Red Flag" symptoms occur (see above).

Working with your school

You should also speak with school staff about helpful accommodations during recovery from a concussion including:

- extra help to finish and organize work
- extra rest time or shorter school day
- less homework for mentally demanding tasks
- more time for tests, or delaying tests
- more flexible due dates for assignments
- schedule according to energy and symptoms
- seating that will decrease distractions
- access to classmate's or teachers' notes
- modify complex environments (such as separate lunch or recess locations/activities)

Recommendations are adapted from: Zemek, R., Reed, N., Dawson, J., et al . "Living Guideline for Pediatric Concussion Care." www.pedsconcussion.com

Returning to physical activities and school/work protocols

Returning to activities, school, and work is an important part of your recovery from a concussion. Return to activity/sport and school protocols should be started at the same time. Step 1 of both protocols (rest) should not last longer than 1-2 days. Resting longer than 2 days may delay your recovery. After step 1, progress through each step in the protocol as you can tolerate any symptoms. Before progressing to step 5 of return to activity, medical clearance by a doctor or nurse practitioner is required and you must have completed step 5 in return to school. You should not participate in gameplay/scrimmages, full contact sports or higher risk activities while still having symptoms. Returning to activities with a risk for falling or hitting your head before medical clearance could lead to a more severe re-injury.

Return to Activity Protocol:

1	2	3	4	5	6
Rest (1-2 days maximum)	Light aerobic activity (begin 1-2 days after concussion)	Sport-specific exercise	Non-contact training drills	Full contact practice (no competitions)	Full return to all activities including competitive sport
Suggested: Activities around the house, light walking if tolerated. Avoid: Sports, activities that increase your heart rate or worsen symptoms.	Suggested: Walking, jogging, stationary cycling for 20-30 minutes at a time. Take a rest if moderate or severe symptoms increase. Avoid: Resistance training.	Suggested: Running or skating drills, light resistance training. Avoid: Impact or risk of falling activities (e.g. cycling outdoors)	Suggested: Harder training drills (e.g., passing drills). Avoid: Collisions or high speed activities at risk of falling	Medical clearance from a doctor or nurse practitioner is required before returning to full-contact sport, game-play, or higher risk activities.	All physical activities and competitions with no restrictions.
				Gameplay in practices, higher-risk activities including skiing.	
		Participation in low-risk school gym class activities is permitted.		Participation in all gym class activities (after medical clearance)	
Relative rest	Increase heart rate.	Add movement, increase activity time, increase intensity of activity.	Full exertion, increased coordination and thinking. No body contact.	Restore confidence and assess functional skills in full contact game play and higher-risk of falling/colliding activities.	Full return to activity and sport

Return to school protocol:

1	2	3	4	5
Rest (1-2 days maximum)	Light activities and return to school for 1-2 hours/day	Gradual return to the classroom activities with maximum academic accommodations	Return to school full-days academic accommodations as needed based on symptoms	Full days at school, full testing and homework. No academic accommodations that are related to the concussion,
Suggested: Crafts, board games and talking on the phone Avoid: schoolwork, screen-time, work, and driving.	Suggested: Reading, texting, screen time (if tolerated), activities that do not make symptoms worse. Start at 15-30 minutes at a time and gradually build up.	Suggested: Homework, reading, other cognitive activities. Avoid: all school activities that pose a risk for hitting head. Note: Medical clearance is not required to return to school.	Suggested: Tests, homework. Reduce concussion-recovery related academic accommodations as symptoms improve. Avoid: all school activities that pose a risk for hitting head.	Full school participation. Note: This step must be completed before clearance to return to high-risk activities and full-contact sports.
Connect with school to develop a plan for your return to school.	Gradual return to typical activities including connecting with teachers and peers at school	Increase tolerance to cognitive/thinking activities in classroom setting.	Gradual introduction of full school work load.	Return to full academic activities and catch up on missed school work.

Recommendations are adapted from: Zemek, R., Reed, N., Dawson, J., et al. "Living Guideline for Pediatric Concussion Care." www.pedsconcussion.com