Concussion Toolkit

For healthcare providers

A comprehensive concussion guide for healthcare professionals. These materials have been endorsed by the Georgia Department of Public Health.

choa.org/concussion
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Visit choa.org/concussion to view educational videos and downloadable materials.
Children’s Concussion Program

Comprehensive care
Several teams at Children’s Healthcare of Atlanta work together to treat concussion patients. This multidisciplinary approach helps make our Concussion Program unique. Services include:

• Emergency medicine
• Neurology
• Neuropsychology
• Neurosurgery
• Physiatry (physical medicine and rehabilitation)
• Sports medicine
• Urgent care

Coordinated care
Our dedicated concussion nurse helps coordinate each child’s care and serves as a resource for healthcare professionals. Our team works with each child’s primary care doctor to help develop the plan of care.

Call 404-785-DOCS (3627) to refer a patient or to speak with the concussion nurse.

Visit choa.org/concussion for more information on our program.
Concussion

Definition of a concussion
As with the definition of coma, the definition and grading of concussion is seemingly straightforward but has been debated among many. The 1993 American Congress of Rehabilitation Medicine (ACRM) Mild Traumatic Brain Injury Committee was the first organized interdisciplinary group to advocate specific criteria for the diagnosis of concussion. A modified definition of concussion is as follows:
Concussion is a traumatically induced physiological disruption of brain function where the Glasgow Coma Score range is 13 to 15 and has at least one of the following manifestations:
• Any alteration in mental status at the time of the accident—feeling dazed, disoriented or confused
• Any loss of memory for events immediately before or after the accident in which the amnesia is less than 24 hours
• Any loss of consciousness less than 30 minutes
• Focal neurological deficits that may or may not be transient

Neurocognitive testing
Neurocognitive testing or neuropsychological testing in athletes began in the 1980s and has expanded in the last decade with the availability of computerized testing. Some studies indicate persistent neurologic impairment may exist even though symptoms resolve. Therefore, neurocognitive testing is a tool that can identify subtle cognitive impairment and aid in documenting an athlete's recovery from a concussion. Neurocognitive testing should not function as the sole determinant that a concussion has occurred or that a concussion has resolved. It is simply a concussion management tool and its role in concussion management is still debated among professionals in the field.

Our consensus on the role of computerized cognitive testing in the management of concussed patients is as follows:
1. The role of computerized cognitive tests in the management of concussions has not been fully established.
2. These tests may be used as a method to assess the degree of cognitive impairment following a concussion.
3. These tests may be used as a method to monitor progression (improvement or deterioration) following a concussion.
4. Computerized cognitive tests are most commonly used in athletes, especially when baseline testing was done prior to the concussion.
5. These tests are not mandatory for managing patients who have sustained a concussion.
6. These tests are not a substitute for the initial or subsequent clinical evaluations of patients who has sustained a concussion.

The most widely used neurocognitive evaluation in the U.S. for athletes is ImPACT, or Immediate Post-Concussive Assessment and Cognitive Testing. It is a computer-based evaluation that requires an internet connection and takes about 30 minutes to complete. It measures an athlete's:
• Symptom inventory
• Verbal and visual memory
• Attention span
• Nonverbal problem-solving
• Processing speed
• Reaction time

The results can be saved in a PDF format for emailing to doctors, coaches or other members of the concussion management team. The test can be administered by an athletic trainer, school nurse, athletic director, team doctor or psychologist. It is recommended that test administrators complete training in giving and interpreting the evaluation.

The ImPACT evaluation can be given to an athlete before the season begins or before he receives a head injury. This is called a baseline test. Some schools recommend baseline testing for all athletes age 12 and older, while others recommend baseline testing only for those participating in high-risk sports. It is recommended that baseline testing be completed every other year. Baseline testing can be especially useful for students who have pre-existing conditions that can cause cognitive scores to be lower than would be expected. Some conditions that may affect the results include psychiatric disorders, emotional problems, attention deficit hyperactivity disorder (ADHD), learning disabilities, dyslexia and previous head injuries. One weakness of baseline neurocognitive testing is that an honest answer is not required when the athlete takes the test. Some athletes deliberately try to make a low score in order to make it more likely he will be able to “pass” the test in the event of a concussion during the season.

If baseline testing is not available in a concussed athlete, then age-matched norms are used to determine what the “normal” scores are for that individual student. Age-matched norms were found by testing a large number of individuals who did not have a concussion prior to taking the test.
DOWNTIME MILD TRAUMATIC BRAIN INJURY/CONCUSSION ASSESSMENT CRITERIA TOOL

1. Complete Neuro Exam including Glasgow Coma Score:

2. Abnormal Physical findings?
   a. Is there evidence of a forcible blow to the head (direct or indirect)? □ Direct □ Indirect □ Unknown
   b. Is there evidence of intracranial injury or skull fracture? □ Yes □ No
   c. Location of Impact:
      □ Frontal □ Left Temporal □ Right Temporal □ Left Parietal □ Right Parietal □ Occipital □ Neck

3. Cause: □ MVC □ Pedestrian-MVC □ Fall □ Assault □ Sports (specify) □ Other

4. Was the injury witnessed or un-witnessed? □ Witnessed □ Un-witnessed

5. Amnesia:
   BEFORE (Retrograde) Are there any events just BEFORE the injury that you/your child have no memory of (even brief)?

   AFTER (Anterograde) Are there any events just AFTER the injury that you/your child have no memory of (even brief)?


7. EARLY SIGNS: □ Appears dazed or stunned □ Is confused about events □ Answers questions slowly □ Repeats questions □ Forgetful (recent info)

8. Seizures: Were seizures observed? □ Yes □ No

Check all that apply (symptoms are subjective)

<table>
<thead>
<tr>
<th>Physical</th>
<th>□ if present</th>
<th>Cognitive</th>
<th>□ if present</th>
<th>Sleep</th>
<th>□ if present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Feeling Mentally Fogggy</td>
<td>Drowsiness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td>Feeling Slowed Down</td>
<td>Trouble Falling Asleep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vomitting</td>
<td>Difficulty Concentrating</td>
<td>Sleeping More Than Usual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance Problems</td>
<td>Difficulty Remembering</td>
<td>Sleeping Less Than Normal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizziness</td>
<td>Emotional</td>
<td>Do these symptoms worsen with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Problems</td>
<td>Irritability</td>
<td>Physical Activity □ Yes □ No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>Sadness</td>
<td>Cognitive Activity □ Yes □ No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to Light</td>
<td>More Emotional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to Noise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numbness or Tingling</td>
<td>Nervousness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How different is the person acting compared to his/her usual self?
Normal 0 1 2 3 4 5 Very different
Caregiver providing assessment:

**DOWNTIME MILD TRAUMATIC BRAIN INJURY/CONCUSSION ASSESSMENT CRITERIA TOOL**

**PATIENT IDENTIFICATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of Birth</th>
<th>MRN#</th>
<th>Account/HAR#</th>
</tr>
</thead>
</table>

**Date of Exam:**

- Initial
- Second
- Third
- Fourth
- Additional

**Injury Assessment**

1. Complete Neuro Exam including Glasgow Coma Score:

2. **Abnormal** Physical findings?
   - Is there evidence of a forceful blow to the head (direct or indirect)?
   - Is there evidence of intracranial injury or skull fracture?
   - Location of Impact:
     - Frontal
     - Left Temporal
     - Right Temporal
     - Left Parietal
     - Right Parietal
     - Occipital
     - Neck

3. **Cause:**
   - MVC
   - Pedestrian-MVC
   - Fall
   - Assault
   - Sports (specify)
   - Other

4. Was the injury witnessed or un-witnessed?
   - Witnessed
   - Un-witnessed

5. **Amnesia:**
   - BEFORE (Retrograde) Are there any events just BEFORE the injury that you/your child have no memory of (even brief)?
   - AFTER (Anterograde) Are there any events just AFTER the injury that you/your child have no memory of (even brief)?

6. **Loss of Consciousness:**
   - Did you/your child lose consciousness?
   - Yes, how long?
   - No

7. **EARLY SIGNS:**
   - Appears dazed or stunned
   - Is confused about events
   - Answers questions slowly
   - Repeats questions
   - Forgetful (recent info)

8. **Seizures:**
   - Were seizures observed?
   - Yes
   - No

**Check all that apply (symptoms are subjective)**

<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
<th>Sleep</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ if present</td>
<td>□ if present</td>
<td>□ if present</td>
<td></td>
</tr>
</tbody>
</table>

- Headache
- Nausea
- Vomiting
- Balance Problems
- Dizziness
- Visual Problems
- Fatigue
- Sensitivity to Light
- Sensitivity to Noise
- Numbness or Tingling

**Physical**

- Feeling Mentally Fogy
- Feeling Slowed Down
- Difficulty Concentrating
- Difficulty Remembering
- Emotional
- Irritability
- Sadness
- More Emotional

**Cognitive**

- Drowsiness
- Trouble Falling Asleep
- Sleeping More Than Usual
- Sleeping Less Than Normal

**Sleep**

- Do these symptoms worsen with
  - Physical Activity
  - Cognitive Activity

- How different is the person acting compared to his/her usual self?
  - Normal 0 1 2 3 4 5 Very different

- Caregiver providing assessment:

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Concussion sideline reference card

Sideline evaluation for coaches and athletic trainers

**Concussion**

**Signs and symptoms evaluation**

404-785-KIDS (5437)

choa.org/concussion

**Signs observed by staff**
- Appears dazed or stunned
- Is confused about assignment
- Forgets plays
- Is unsure of game or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (even temporarily)
- Shows behavior or personality changes
- Forgets events prior to hit (retrograde amnesia)
- Forgets events after hit (anterograde amnesia)

**Symptoms reported by athlete**
- Headache
- Nausea
- Balance problems
- Dizziness
- Double vision
- Fuzzy vision
- Sensitivity to light or noise
- Feeling sluggish
- Feeling foggy
- Change in sleep pattern
- Concentration problems
- Memory problems

*Symptoms may worsen with exertion. The athlete should not return to play that day and must be cleared by a physician before returning to activities.*

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away. ©2016 Children’s Healthcare of Atlanta Inc. All rights reserved. SPM 964292 kc 05/16

**Sideline**

**Cognitive testing**

404-785-KIDS (5437)

choa.org/concussion

**Ask the athlete the following questions:**
- What city are you in? What month is it?
- Who is the opposing team? What day is it?

**Ask the athlete to repeat the following three words:**
- Girl, dog, green

**Ask the athlete the following questions:**
- What happened in the prior quarter/period?
- What do you remember prior to the hit?
- What was the score of the game prior to the hit?
- Do you remember the hit?

**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)

**Repeat the three words from earlier:**
- Girl, dog, green

*Any failure should be considered abnormal. The athlete should not return to play until cleared by a physician as a concussion may have occurred.*
Glasgow Coma Scale

The Glasgow Coma Scale (GCS) is a score of a patient’s state of consciousness or coma. It is a universally used, reliable scale that is obtained by clinically evaluating the patient. The components measured are the motor (M), verbal (V) and eye-opening (E) scores. The sum of the resulting points give a patient score between 3, indicating deep unconsciousness, and 15, fully alert.

### Grade of traumatic brain injury (TBI) vs GCS

<table>
<thead>
<tr>
<th>Grade of TBI</th>
<th>GCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe TBI</td>
<td>≤ 8</td>
</tr>
<tr>
<td>Moderate TBI</td>
<td>9 to 12</td>
</tr>
<tr>
<td>Mild TBI (MTBI)</td>
<td>≥ 13</td>
</tr>
</tbody>
</table>

Individual elements as well as the sum of the score are important. For example, the score is expressed in the form “GCS 9 = E2 V4 M3”.

### Glasgow Coma Scale

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor</strong></td>
<td>Makes no movements</td>
<td>Extension to painful stimuli (decerebrate response)</td>
<td>Abnormal flexion to painful stimuli (decorticate response)</td>
<td>Flexion/withdrawal to painful stimuli</td>
<td>Localizes painful stimuli</td>
</tr>
<tr>
<td><strong>Verbal</strong></td>
<td>Makes no sounds</td>
<td>Incomprehensible sounds</td>
<td>Utters inappropriate words</td>
<td>Confused, disoriented</td>
<td>Oriented, converses normally</td>
</tr>
<tr>
<td><strong>Eyes</strong></td>
<td>Does not open eyes</td>
<td>Opens eyes in response to painful stimuli</td>
<td>Opens eyes in response to voice</td>
<td>Opens eyes spontaneously</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Glasgow Coma Scale

Best motor response (M)
There are six grades, starting with the most severe:
6. **Obeys commands**—Patient does simple things as asked
5. **Localizes to pain**—Purposeful movements toward painful stimuli (e.g., hand crosses midline and gets above clavicle when supra-orbital pressure is applied)
4. **Flexion/withdrawal to pain**—Flexion of elbow, supination of forearm, flexion of wrist when supra-orbital pressure is applied; patient pulls part of body away when fingernail bed is pinched
3. **Abnormal flexion to pain**—Adduction of arm, internal rotation of shoulder, pronation of forearm and flexion of wrist, and the patient has a decorticate response
2. **Extension to pain**—Abduction of arm, internal rotation of shoulder, pronation of forearm and extension of wrist, and the patient has a decerebrate response
1. **Patient has no motor response**

Best verbal response (V)
There are five grades, starting with the most severe:
5. **Oriented**—Patient responds coherently and appropriately to questions, such as the patient’s name and age, where they are and why, the year and month
4. **Confused**—Patient coherently responds to questions, but there is some disorientation and confusion
3. **Inappropriate words**—Patient makes random or exclamatory articulated speech but no conversational exchange
2. **Incomprehensible sounds**—Patient moans but says no words
1. **Patient has no verbal response**

Best eye response (E)
There are four grades, starting with the most severe:
4. **Patient’s eyes open spontaneously**
3. **Eye-opening to speech**—Not to be confused with a waking a sleeping person, these patients receive a score of 4, not 3
2. **Eye-opening in response to pain**—Patient responds to pressure on the patient’s fingernail bed, if this does not elicit a response, supraorbital and sternal pressure or rub may be used
1. **Patient does not open his eyes**
Red flags

If any of the following findings are noted during the exam, the patient should be referred to an emergency department.

- Altered mental status
- Abnormal neurological exam
- Severe headache or headaches that get worse
- Clear drainage from the nose or ear(s)
- Hematoma that gets larger
- Non-frontal hematoma
- Seizure
- Neck pain
- Vomits more than once
- Difficult to arouse, lethargic
- Confusion or memory problems
- Weakness in the arms or legs or does not move them as usual
- Slurred speech
- Syncope
- Concern that symptoms may not be related to the recent minor head injury
- Evidence or strong suspicion of skull fracture
- Severe mechanism
- Multiple or worsening symptoms, especially in a younger child
Emergency department and CT scan referral criteria

Patients with a concussion can be safely observed without being seen in an emergency department or having a CT scan of their head if:

- They have a normal neurologic exam by their primary care provider and a normal mental status.
- They can take liquids by mouth without vomiting.
- They have no signs of a skull fracture, such as bruising under the eyes or behind the ears, or swelling on the head.
- There is no suspicion for abuse.
- Their headache can be controlled with oral medication.
- They have no medical conditions that increase their risk for more serious traumatic brain injuries such as bleeding disorders.

Immediate referral to an emergency department for evaluation and emergent head CT scan should occur if there is:

- Altered mental status (GCS<15).
- Concern for intracranial process.
- Concern that symptoms may not be related to the recent minor head injury.
- Abnormal neurological exam.
- Evidence or strong suspicion of skull fracture.

Consider obtaining CT scan if there is:

- Non-frontal hematoma.
- Multiple or worsening symptoms especially in a younger child.
- Severe headache and/or recurrent emesis.
- Severe mechanism.
Emergency department algorithm

Guideline for children with acute mild traumatic head injury (GCS ≥13)

Patient with History of Acute Mild Traumatic Head Injury (GCS ≥ 13)

Increased risk for ciTBI

YES

NO

Significant Clinical Findings

YES

Additional Risk Factors

YES

NO

Neurologically Normal Patient may be Discharged Home if Discharge Criteria is Met

YES

Discharge Criteria Met

YES

NO

Admit for Supportive Care Consider CT if clinically indicated

Neurosurgery consult and admit to Neurosurgery

Reassess

YES

NO

ED Observation

YES

CT

OR

Radiographic (CT) evidence of ciTBI?

YES

NO

Discharge Home

1Increased risk for ciTBI

• Evidence of Skull Fracture
• Abnormal Neurological exam

2Significant Clinical Findings

• Altered Mental Status such as
  Agitation, Persistent/Deep Somnolence or Repetitive Questioning
• Persistent Slow Response to Verbal Communication
• Occipital, Parietal or Temporal hematomas
• Severe Headache
• Multiple Emesis
• Severe mechanism of injury:
  • Motor Vehicle Crash with Ejection
  • Death of another passenger
  • Rollover
  • Pedestrian or bicyclist w/o helmet struck by motor vehicle
  • Fall > 5 feet if > 2 years; > 3 feet if < 2 years
  • Head struck by high-impact object

3Additional Risk Factors

• Multiple symptoms
• Loss of consciousness
• Worsening signs or symptoms
• Younger infant
• Delayed onset seizure
• Persistent GCS of 13 or 14

Further close observation and frequent reassessment are recommended up to 4 hours.

• If worsening obtain CT
• If there is a high speed mechanism with the isolated head injury; admit to Neurosurgery*

PO ED Observation

Discharge Criteria

• Pain & Emesis controlled
• Caretakers understand Discharge Care Instructions
• Caretakers able to return to ED if symptoms worsen

Discharge Home

• Discharge using current Concussion teaching sheet which includes:
  • PCP follow-up information
  • Detailed Activity Restrictions
  • Return to School
  • Return to Play
• Provide Contact # for Concussion Program Nurse 404-785-KIDS (5437) and ask for a concussion nurse.

ciTBI clinically important Traumatic Brain Injury
GCS Glasgow Coma Scale
LOC Loss of Consciousness
PCP Primary Care Physician

Developed through the efforts of Children’s Healthcare of Atlanta and physicians on Children’s medical staff in the interest of advancing pediatric healthcare. This guideline is a general guideline and does not represent a professional care standard governing providers’ obligation to patients. Ultimately the patient’s physician must determine the most appropriate care. © 2016 Children’s Healthcare of Atlanta, Inc.
### Emergency department algorithm

Guideline for children with acute mild traumatic head injury (GCS ≥13)—explanation of criteria

<table>
<thead>
<tr>
<th><strong>Exclusion Criteria</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with one or more existing co-morbidities that would impair an accurate neurological assessment are excluded from this guideline.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Altered Mental Status</strong></th>
<th><strong>Severe Mechanism of Injury</strong></th>
<th><strong>Risk of ciTBI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Agitation</td>
<td>• Motor vehicle crash with ejection</td>
<td>Exceedingly low, generally lower than risk of CT-induced malignancies</td>
</tr>
<tr>
<td>• Somnolence</td>
<td>• Death of another passenger</td>
<td>Therefore, CT scans are not indicated for most patients in this group</td>
</tr>
<tr>
<td>• Repetitive questioning</td>
<td>• Rollover</td>
<td></td>
</tr>
<tr>
<td>• Slow response to verbal communication</td>
<td>• Pedestrian or bicyclist w/o helmet struck by motor vehicle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fall &gt; 5 feet if &gt; 2 years; &gt; 3 feet if &lt; 2 years.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Head struck by high-impact object</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Additional Risk Factors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians should use clinical judgment based on their understanding of the literature, clinical experience and the parents' perspective of changes from baseline/typical behavior.</td>
</tr>
<tr>
<td>In general, risk of ciTBI increases with multiple symptoms and in younger infants.</td>
</tr>
<tr>
<td>Patients with isolated findings (i.e. with no other findings suggestive of TBI) such as isolated: LOC, headache, vomiting, &amp; scalp hematomas in infants &gt;3mo have a risk of ciTBI substantially lower than 1 percent.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Observation in the ED</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation in the ED for signs of increasing intracranial pressure (e.g. increased pain, vomiting, decreased alertness or altered mental status) for at least one hour up to four hours post injury depending on physician’s assessment of risk for ciTBI.</td>
</tr>
<tr>
<td>At present there is not enough published data to judge whether ondansetron’s antiemetic effect may mask signs of ciTBI. Therefore, neuro-imaging or hospitalization should be considered for any patient who requires an antiemetic for persistent emesis.</td>
</tr>
<tr>
<td>Phenothiazines are generally discouraged except in cases of migraine headaches and vomiting refractory to ondansetron.</td>
</tr>
<tr>
<td>Outpatient use of ondansetron following closed head injury should be cautious.</td>
</tr>
<tr>
<td>Any patient with an increase in symptoms following a head injury should have a re-evaluation.</td>
</tr>
<tr>
<td>Patients who have not received neuro-imaging may receive acetaminophen for pain.</td>
</tr>
<tr>
<td>Patients who require I.V. medications (e.g. opioids) likely require admission for supportive care.</td>
</tr>
<tr>
<td>Patients who have had a normal head CT or have met discharge criteria may receive NSAIDs such as ibuprofen.</td>
</tr>
</tbody>
</table>

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*Final 4/13/2011*

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Concussion management in the student athlete requires a coordinated effort among school personnel along with parents and athletes. This process starts with forming a concussion recovery team (CRT). CRT members should advocate for academic and physical accommodations to reduce delays in the student’s return to full, unrestricted academic and athletic activities.

Potential members of the CRT should be identified at the beginning of the school year in preparation that a student athlete will suffer a concussion. This way, members will be aware of their role in concussion management and facilitate a smooth transition back into the classroom and on the playing field.

CRT members include but are not necessarily limited to:
- Students
- Parents/guardians
- School administrators/guidance counselors
- Teachers
- School nurses
- Athletic trainers
- Physicians

**Students**

The Return-to-Play Act of 2013 requires students be made aware of the risk of concussions. Encourage students to report symptoms to their coach, athletic trainer, school nurse, parents or other school personnel.

This should be emphasized at preseason team meetings, as well as continuously throughout the season. It is recommended that students:
- Be aware of the risk of severe injury, permanent disability and even death that can occur if a second concussion is sustained before completely recovering from a concussion.
- Be aware of the signs and symptoms associated with concussions and the importance of reporting them to the coach, athletic trainer, school nurse or parent.
- Participate in the “buddy system,” which encourages them to report concussion signs or symptoms to teammates.
- Follow instructions from their team physician or private physician.

**Teachers**

Teachers can assist concussed students by creating an environment and developing modified curricula that allow students to return to the classroom and minimize aggravating stimuli. They should:
- Be aware of the emotional and academic issues students with concussions face.
- Report academic issues to other members of the CRT.
- Encourage students to report their classroom symptoms.
- Provide classroom academic support with assignment modification.
- Create a classroom environment free of distractions.
- Encourage open communication between the physician and parents.
Concussion management team roles

School nurse
The school nurse is a team member who communicates with the physician, parents and school staff. She will collect documentation and orders from the medical provider and see that orders are implemented. The school nurse will also be an integral part of ongoing assessments during the academic recovery period. The school nurse should:

• Assess students who suffered an injury at school for signs and symptoms of a concussion. She must provide an area of observation and refer as appropriate.
• Communicate with parents regarding their child’s status and recommend a referral to a physician if appropriate.
• Provide parents of students believed to have sustained a concussion with written and oral instructions for observation and criteria for seeking immediate emergency care.
• Assist in the implementation of medical providers’ instructions for academic accommodations.
• Monitor the student’s return-to-school activities, provide feedback to the medical provider and implement changes as necessary.
• Assist in developing a 504 Plan if appropriate.
• Maintain records of school assessments and all written communication from the medical provider, including letters for return-to-play clearance.
• Perform post-concussive assessments, including symptom inventory checklists, as well as administering computerized neurocognitive testing of students.
• Participate in the education of staff members in concussion recognition and management.

Athletic trainer certified
The athletic trainer certified (ATC) is often the only healthcare provider present at games and practices, so he must be comfortable with the acute recognition and early management of concussions. ATCs receive training in concussion recognition and management during their education and certification process. Because of this, the Return-to-Play Act of 2013 recognizes ATCs as qualified medical professionals trained in the management of concussions. The ATC should:

• Oversee athletes taking a baseline neurocognitive test if directed by local policy.
• Educate student athletes on the importance of recognizing and reporting signs and symptoms of a concussion.
• Evaluate athletes on the field or in the training room who are suspected of having sustained a concussion, and observe and refer as appropriate.
• Evaluate athletes and determine if signs and symptoms warrant emergency referral to a medical facility.
• Provide parents and guardians with verbal and written instructions on observing the athlete for complications that warrant emergency care.
• Play a role in assisting the team or private physician request for accommodations.
• Monitor—with the school nurse—the student’s return-to-school and physical activities, communicating each step with other members of the CRT.
• Oversee the athlete’s seven-step Return-to-Play Program and communicate progress to other members of the concussion recovery team.
Concussion management team roles

Physician

The team physician or private physician plays an important role in the management of the concussed student athlete. She will be involved in the initial assessment and establish the diagnosis of a concussion after an office appointment. After this visit, the physician must communicate information on the diagnosis and recommendations to the rest of the CRT. The physician must be aware that there are laws that govern confidentiality of medical information. This is referred to as HIPAA, or the Health Information Portability and Accountability Act. Therefore, the physician must receive consent from the parent/guardian to communicate medical information to school personnel.

The physician should:
- Oversee and approve educational programs for school personnel.
- Confirm the diagnosis of a concussion.
- Provide, in writing, academic and physical restrictions to members of the CRT.
- Provide weekly updates to the CRT in writing on the student athlete’s progress and modification of academic and physical restrictions.
- May interpret cognitive function tests if administered at school, if they feel comfortable or have had training in interpreting ImPACT evaluation.
- Provide written clearance for return to full academic and athletic activities when appropriate.
- Be encouraged to inform teachers if they’re having difficulty in the classroom.
- Participate in creating an environment on the field and in the locker room where reporting signs and symptoms of a concussion is encouraged.

Parents/guardians

Parents/guardians play a vital role in managing their child's concussion. They must communicate with both the medical team and school personnel, and often function as the primary advocate for their child. They may need to pick up their child from school during the day if he has symptoms, as well as transport him to and from doctor visits. It is recommended that parents/guardians:
- Familiarize themselves with the signs and symptoms of a concussion.
- Understand that the Return-to-Play Act of 2013 requires them to immediately remove an athlete from play if he shows signs and symptoms of a concussion.
- Communicate appropriate medical information from the physician to school personnel.
- Create a home environment conducive for concussion recovery.
- Communicate with the school staff if the child is experiencing concussion symptoms at the end of the school day.
- Follow medical provider recommendations for return to activities at home and school.

School administrator/guidance counselor

The role of the school administrator/guidance counselor is to follow the district’s policies on concussion management. He should:
- Review the district’s concussion policy with all staff.
- Arrange in-service training sessions for all staff and parents regarding concussion management in the school setting.
- Provide a written emergency concussion plan and communication devices for all school activities.
- Encourage members of the CRT about their role in the management of the concussed student athlete.
- Encourage open communication with the private physician, team physician, parents/guardians and school personnel.
- Encourage parents/guardians to participate in determining their child’s needs at school.

A sample of the Letter of Academic Accommodation can be found on Page 24. Sample return-to-play and game clearance letters can be found on Pages 26 and 27. You may use these for your patients to provide to their schools.
Concussion management team roles

Concussion nurse coordinator
At Children’s, the concussion nurse coordinator plays an important role in the management of concussions. The nurse coordinator advises parents, patients and community healthcare providers. Our nurse coordinator follows up with all patients seen in the Children’s Emergency Departments or Urgent Care Centers who have sustained a concussion to answer questions and help make sure they are on the path to recovery. Community healthcare providers may use the nurse coordinator to determine which specialist is right for their patient. The nurse will also help answer questions about concussion treatment, including the Children’s return-to-school and activities guidelines.

Contact for patient families: 404-785-KIDS (5437)
Make a referral: Call 404-785-DOCS (3627) or visit choa.org/concussionreferral.

Emergency Departments and Urgent Care Centers
The Emergency Departments and Urgent Care Centers at Children’s play an important role in identifying concussed patients soon after they sustain an injury. Our team helps diagnose concussion patients and provides them with guidance on initial management, including guidelines for returning to school and activities. The emergency medicine and urgent care physicians can also help recommend other specialists if needed.

Neurology
The neurologist may play a role in evaluating concussed patients. It is especially important if the patient has pre-existing neurological conditions or if a patient without a history of neurological issues has lingering symptoms of concussion such as headaches. Additionally, a primary referral to a neurologist should be considered if the patient has suffered multiple concussions.

A referral to a neurologist should be considered if there is:
- A history of seizures
- Chronic headaches (lasting more than four weeks)
- Persistent neurological symptoms (e.g., balance issues, neurological findings on exam)
- Acute concussions

Neuropsychology
The neuropsychologist plays a role in managing concussed patients if there are lingering cognitive issues post-concussion. The neuropsychologists have access to in-depth cognitive testing and work with schools to help create a plan for school re-entry. A neuropsychologist will help patients with cognitive issues such as memory and attention, as well as reaction time and fatigue, while working with the school to modify assignments or help determine if a student support team or 504 Plan is needed.

A referral to a neuropsychologist should be considered if the patient has:
- Difficulty returning to school or play due to issues with cognitive functioning after four weeks.
- Problems with mood or stress that continue after the concussion.
- Pre-existing issues related to learning disabilities, ADHD, depression or anxiety.
- Acute concussions.
- Questions related to effort or possible secondary gain.

Neurosurgery
The neurosurgeon primarily plays a role in managing concussed patients if there are any associated injuries that may require surgical treatment. These problems are usually evident initially but may manifest only days or weeks later. These injuries are fortunately not common but can be life-threatening if left untreated.

Neurosurgeons will see patients with:
- An expanding brain bleed manifested by progressive loss of consciousness.
- Brain edema or swelling after a seemingly minor head injury.
- Concern for an associated spinal injury.
- Skull fracture.
- Cerebrospinal fluid leak from the ear (CSF otorrhoea) or nose (CSF rhinorrhoea).
Concussion management team roles

Physiatry
The physiatrist plays a role in managing concussed patients if there are both physical and cognitive issues post-concussion. A physiatrist can prescribe additional treatment and support if physical therapy is needed in addition to the cognitive rehabilitation. A referral to a physiatrist should be considered if the patient:
- Has acute physical and cognitive symptoms.
- Is not an athlete.
- Is an athlete younger than age 10.
- Has ongoing vestibular issues (e.g., dizziness, balance problems, sensitivity to light and noise).
- Has acute sports concussions.

Sports medicine
The sports medicine physician plays a role in managing concussed patients who are athletes or for those who sustained their injury while playing a sport. Our sports medicine physicians have extensive knowledge of concussions, as well as other sports-related injuries that may occur. Sports medicine physicians provide athletes with detailed information and instructions on how to return to their sport. A referral to a sports medicine physician should be considered if:
- The athlete is older than age 10 and the concussion was sustained while playing a sport.
- Symptoms have not lasted more than two weeks.
Cognitive rest and the academic recovery plan

Cognitive rest: Strategies for returning to school

The chemical disturbance resulting in the supply-and-demand mismatch in the brain require rest in order to recover. Any task requiring the brain to think, concentrate, remember and reason stresses the concussed brain beyond its capability, prolongs recovery and may even worsen symptoms.

Such tasks include:
- Watching TV
- Playing on computers and video games, even on small smartphone screens
- Texting or social media
- Studying or doing homework
- Reading or writing
- Being in bright lighting
- Listening to loud music

As the symptoms improve, the student may be able to complete some schoolwork at home in a quiet environment. When the child is ready to go back to school, he should follow a gradual return with an academic recovery plan developed by the school.

Academic recovery plan

In conjunction with a student and his parents/guardians, the school will develop an academic recovery plan. This will consist of instructions to monitor the student for mental activities that worsen the signs and symptoms of a concussion. Any activity that produces or worsens signs and symptoms of a concussion should be ceased. The plan will also develop and recommend academic modifications for the student as he returns to school.

Academic modifications may include:
- A shorter school day
- Only attending core classes and resting in the school nurse’s office during noncore classes
- Providing the student with pre-printed class notes
- Not giving quizzes or tests
- Alternative assignments
- Allowing students to audiotape classes
- Providing assignments in writing
- Preferential seating to minimize distractions
- Eating lunch with a friend in the school nurse’s office
- Leaving class five minutes early to avoid noisy hallways
- Shortened homework assignments

Initially, the student may be able to complete only a couple hours of school. As he continues to recover, he will be able to accommodate a larger academic load and eventually remain symptom-free after a full school day.
Healthcare provider academic action plan

**Acute period (days 0-13 after a concussion)**

**The healthcare provider may:**
1. Recommend time off from school if needed.
3. Participate in a student support team meeting scheduled by the school and parent/guardian.

**Note:**
- Most concussion symptoms will resolve within seven to 10 days.
- Some students with severe symptoms may require time off from school, but this period is usually limited to three days or less.
- In general, a quick return to academics is recommended because removal from school can lead to anxiety about making up work, as well as separation from one’s normal circle of friends, which can have negative social consequences.
- Early intervention and cognitive rest soon after the concussion is best for returning patients to the school environment in a timely manner without provoking symptoms.

**Letter of Academic Accommodation**

The Letter of Academic Accommodation, sometimes called the Letter of Academic Adjustment, is the first step for the healthcare provider in assisting the patient with a gradual return to school. The letter should be implemented at the time of the initial evaluation with a copy of the letter saved in the physician records for documentation. This letter notifies the school of the patient’s academic needs. This step helps initiate changes in the school day and encourages a student support team meeting.

This letter is:
- A physician-implemented tool.
- Not legally binding.
- Intended to provide concussed individuals with immediate access to recovery strategies.
- A customizable document that allows a treating physician to use her clinical expertise to make recommendations that will allow a patient to return to school without exacerbating his symptoms.

**Student support team meeting**

A student support team meeting is the first step in the process of identifying a concussed child that may need assistance at school. Each school has a team—an interdisciplinary group that uses a systematic process to address learning and behavior problems of students, K-12, in a school.1 The team includes the referring teacher, as well as other participants such as school principals or counselors and the parents/guardians.

The team is:
- Not the same as a 504 Plan or Individualized Education Program (IEP)—if the concussion symptoms become chronic, a more formal plan may be utilized.
- An informal process to discuss the Letter of Academic Accommodation and next steps for implementation.
- Created to make sure the school staff, parents/guardians and student are aware of post-concussive symptoms and the academic implications so that a plan is developed to address those needs.

Healthcare provider academic action plan

Subchronic period (days 14-28 after a concussion)

This time period is critical in preventing long-term academic issues.

The healthcare provider should:
1. Provide a Letter of Academic Accommodation.
2. Attend the student support team meeting scheduled by school and parent/guardian to discuss the academic accommodations and determine next steps.
3. Participate in transition to long-term accommodations if needed, such as a 504 Plan or IEP.

504 Plan

The 504 Plan is part of the Rehabilitation Act of 1973 and is designed to protect the rights of individuals with disabilities who are enrolled in programs that receive federal financial assistance from the U.S. Department of Education. The plan requires a school district to provide a “free, appropriate public education” to each qualified student with a disability who is in the school district's jurisdiction regardless of the nature or severity of the disability. Most students who sustain a concussion will not require a 504 Plan.

The healthcare provider should:
1. Give legal documentation.
2. Refer a neuropsychologist, which should be considered to aid in the 504 Plan process and provide assistance with cognitive issues and academic accommodations.

A 504 Plan:
• Should not be considered as a first step, unless the patient has a medically complicated case.
• May be appropriate for a student whose concussion symptoms last several months or longer.
• Is a legally binding document that requires a school to eliminate barriers that would prevent a student from participating in the programs and services offered in the general curriculum. This plan calls for reasonable accommodations to be part of a documented plan, but it does not require an IEP.
• Requires a formal meeting to determine eligibility and accommodations, but written consent from the parents/guardians is not mandatory.
• Varies in length of time to implement, but may take three to four weeks to implement due to the process of gathering information and meeting participants.
• Requires legal documentation.
• Does not provide additional funding to the school district to offset costs.
• Does not provide an Independent Educational Evaluation at the expense of the school district if the student's parents or guardians disagree with the evaluation provided by the school district. Parents or guardians must pay for this evaluation, if they seek one.

504 Plan accommodations may include:
• A quiet learning environment.
• Repeated or simplified instructions.
• Use of a note taker or recording device.
• Textbooks on tape, CD or in an MP3 format.
• Additional time to commute between classes.
• Permission to wear sunglasses indoors.
Individualized Education Program (IEP)

An IEP is a plan derived from the Individuals with Disability Education Act of 2004.

The healthcare provider should:
1. Provide legal documentation.
2. Refer a neuropsychologist for a Multi-factored Evaluation.

The IEP:
- Provides individuals with supplemental educational services beyond those included in the general curriculum.
- Requires neuropsychological testing.
- Is a legally binding document that requires a Multi-factored Evaluation that indicates various assessment tools be used to gather functional information, including cognitive performance, to determine whether the child has a disability and how it affects the child’s educational program.
- Requires written consent by a parent/guardian to conduct the evaluation.
- Varies in length of time to implement, but there may be up to an eight-week waiting period due to complexity and thoroughness of the required evaluation.

A parent may request an Independent Educational Evaluation if she disagrees with the evaluation provided by the school district—at the expense of the school district.

IEP accommodations may include:
- Reduced test lengths, extra time for tests or altered format (e.g., oral instead of written).
- Highlighted books or notes in advance of class.
- Altered presentation of course material (e.g., reformat from lecture to interactive).
- Modified schedule (e.g., half-days, only attending core classes).
- Peer tutoring.

Chronic period (28 days or more after a concussion)

Engage other specialists and consider additional diagnoses

If a patient is still symptomatic from his concussion for more than 28 days after injury and has persistent academic difficulties, the treating provider should take an aggressive, multidisciplinary approach.

The healthcare provider should:
- Consider comorbid conditions that may be preventing recovery. These most frequently include anxiety or depression.
- Refer the patient to a psychologist, sports psychologist or psychiatrist.

Read the full article on academic accommodations

Educational accommodations algorithm

Read the full article on academic accommodations
Letter of Academic Accommodation

Date:

RE:

DOB:

To whom it may concern:

______________________________ has been evaluated in my office for a concussion that occurred ___________________.

Although there is significant variability in symptom presentation and duration, all individuals who sustain a head injury will need time for their brains to recover. It is not unusual to experience headaches and difficulties with attention, concentration and memory. The symptoms usually resolve over time, in most cases in two to three weeks.

These symptoms may affect academic performance. The cognitive exertion that school requires can also provoke symptoms and prolong recovery. The goal is to keep cognitive activity below the level that triggers symptoms. I have recommended that his/her parents request a student support team meeting to facilitate making academic accommodations during this recovery period.

Attached is a list of common accommodations and guidelines from Children’s Healthcare of Atlanta to use as a framework for a plan to help this student. Please excuse ____________________ from school for today’s appointment. Full or partial days missed due to post-concussion symptoms should also be medically excused. He or she should not return to sports or physical education until he or she is able to perform normal schoolwork without symptoms.

Please encourage the student’s parents/guardians to keep you informed of his or her symptoms and recovery. Let me know if you have questions. More information is available at choa.org/concussion (treatment and resources) and cdc.gov (search “concussion”). I am available to assist the student and family with further evaluation, treatments and referrals if recovery is prolonged.

Thank you for your assistance with this matter.

Sincerely,
Physical rest and return to play

Return-to-Play Program
As the student’s symptoms improve, he will be able to begin the Return-to-Play Program.

The seven-step program begins with complete rest until symptoms subside. As the student’s symptoms improve and he is able to increase the amount of time in school without symptoms worsening, he then may progress through the next steps, which include a gradual increase in physical demands, sports-specific activities and eventually physical contact. The final stage is clearance to return to play.

The seven steps involved in the return-to-play protocol are:
1. No activity; complete rest
2. Light aerobic activity–10 to 15 minutes of walking or stationary bike
3. Moderate aerobic activity–20 to 30 minutes of jogging; light resistance training
4. Intense aerobic activity–40 to 60 minutes of jogging/running sport-specific drills
5. Controlled contact training drills
6. Full-contact practice
7. Return to play

Note: Each step should take a minimum of 24 hours.
If symptoms return at any stage, the student should drop back to the previous step and progress after 24 hours of symptom-free rest.

No athlete shall return to play until they are:
• Completely symptom-free
• Remain symptom-free after resuming a full school day
• Remain symptom-free after progressing through Steps 1 through 6 of the Return-to-Play Program
• Return to baseline neurocognitive functioning
• Receive written clearance from a qualified healthcare provider to return to play

A sample Return-to-Play Clearance Letter can be found on the following page. You may use this for your patients to provide to the schools.

Return-to-learn guidelines for patient families can be found in the appendix.
Return-to-Play Clearance Letter

Date: 
RE: 
DOB: 

To whom it may concern:

________________________ is under my care for evaluation and management of a concussion that occurred ______________.

On this date, he or she met the following criteria for return to play:

☐ Has returned to school full time with performance back to normal

☐ No symptoms

☐ ImPACT test back to baseline or normal for age (if an ImPACT test was completed)

He/she may start at Stage ______ (of 7 ) on the attached Concussion Guidelines from Children’s Healthcare of Atlanta. To advance to the next stage, ______________ must be able to do an activity at 100 percent without symptoms or problems for 24 hours. If any symptoms return, it means his/her brain is not ready for the next stage. He/she can try the activities at that stage again when he/she has had no symptoms for 24 hours.

The earliest expected date for game play is _______________. To accomplish this, he/she must progress through the return-to-play stages with no symptoms returning at any point. A final clearance will be given at that time.

Please contact me if you have any questions.

Sincerely,
Return-to-Game Clearance Letter

Date:

RE:

DOB:

To whom it may concern:

_____________________________ is under my care for evaluation and management of a concussion that occurred on ____________.

On this date, he or she met the following criteria for game play.

☐ Has returned to school full time with performance back to normal

☐ No symptoms with progression through return-to-play stages

☐ ImPACT test back to baseline or normal for age (if an ImPACT test was completed)

Please contact me if you have any questions.

Sincerely,

[Signature]
Appendix: Patient family education

- Return-to-learn and return-to-play and sports guidelines
- Patient family teaching sheets
  - English
  - Spanish
## Return-to-learn guidelines

<table>
<thead>
<tr>
<th>Stage of healing</th>
<th>Home activity</th>
<th>School activity</th>
<th>Physical activity</th>
</tr>
</thead>
</table>
| **Stage 1**—Your child still has many symptoms and problems | • Complete rest in a quiet room  
• Allow as much sleep as possible  
• Limit things that require your child to think, focus, reason or remember  
• Remove any electronics and computers from your child’s room  
• Remove any activity planners and to-do lists from your child’s room  
• Give your child plenty of fluids to drink  
• Feed your child small, frequent meals during the day and at bedtime  
• Give your child plenty of carbohydrates to eat, such as whole grain breads and cereals, pasta and rice | • Your child may not go to school. It is typical to rest for 24 to 48 hours and monitor if symptoms improve | See Stage 1 in next chart |
| **Stage 2**—Your child still has some symptoms and problems | • Stay in quiet rooms  
• Allow for enough sleep—at least eight hours  
• Allow your child to use TV, video games, texting, social media and email for a short time—fewer than two hours a day, for example, he might have 20 minutes of brain work followed by a one-hour brain break  
• Help your child to not stress over missed school work  
• Continue with fluids, small, frequent meals and carbohydrates, as in Stage 1  
• As your child has less symptoms, begin adding homework in short sittings to avoid falling behind | • Return to school for half days  
• Attend core classes only or have shortened class time  
• Rest in the nurse’s office between classes and as needed  
• Your child may not take tests or quizzes  
• Use preprinted class notes  
• Complete short homework assignments—work 20 minutes at a time with rest breaks in between  
• Talk with the school nurse or teacher about academic accommodations from your doctor, and create a plan  
• Avoid very loud noises like music and noise in cafeterias, at PE and at recess | See Stage 2 in next chart |
| **Stage 3**—Your child’s symptoms and problems have gone away | • Slowly return to watching TV, playing video games and texting  
• Allow family interactions again  
• Continue with fluids, small, frequent meals and carbohydrates, as in Stage 1 | • Your child may gradually return to a full day of classes  
• He may need to schedule make-up work, tests and quizzes  
• He may take one test or quiz a day with extra time as needed, to complete  
• Tell the school nurse or teacher if any symptoms or problems return | See Stages 2-4 in next chart |
| **Stage 4**—Your child seems back to normal | • Your child may have near normal home and social interactions | • Your child may begin to complete past assignments to catch up on school work | See Stages 5 and 6 in next chart |
| **Stage 5**—Your child may return to full activities | • Your child may return to normal home and school interactions after five days of no symptoms | • Your child may return to normal school function without the need for extra accommodations or restrictions | See stage 7 in next chart |

[choa.org/concussion](http://choa.org/concussion)  
**Concussion nurse: 404-785-KIDS (5437)**

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.
## Return-to-play and sports guidelines

<table>
<thead>
<tr>
<th>Stage of healing</th>
<th>Activity allowed</th>
<th>Examples of sports</th>
<th>Examples of other activities</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No activity</td>
<td>Complete physical rest</td>
<td>Quiet time with rest, Avoid group activities, No head contact activities</td>
<td>Brain rest and healing, BE FREE OF SYMPTOMS</td>
</tr>
<tr>
<td>2</td>
<td>Light aerobic activity</td>
<td>10 to 15 minutes of walking or stationary bike, Light sweat on the brow</td>
<td>Walk in park or neighborhood, Avoid group activities</td>
<td>Increase heart rate to 30 to 40 percent at most</td>
</tr>
<tr>
<td>3</td>
<td>Moderate aerobic activity, Light resistance training</td>
<td>20 to 30 minutes of jogging or stationary bike, Arm curls, shoulder raises, or leg lifts with weights that can be comfortably lifted, One set of 10 repetitions for each activity</td>
<td>Supervised play, Low risk activities such as dribbling a ball, playing catch, changing directions, jumping, side-to-side slides, chasing a ball or catching a ball on the run</td>
<td>Increase heart rate to 40 to 60 percent max, Add resistance, Use eyes to track objects</td>
</tr>
<tr>
<td>4</td>
<td>Intense aerobic activity, Moderate resistance training, Sport-specific exercise</td>
<td>40 to 60 minutes of running or stationary bike, Same resistance exercises with weight for three sets of 10 reps, Pre-competition warm-up such as passing a soccer ball, throwing a football or doing ladder drills</td>
<td>Supervised play, Moderate-risk activities such as balance and agility drills, No head contact activities, Can sweat and breathe heavy</td>
<td>Increase heart rate to 60 to 80 percent max, Increase resistance, Mimic the sport</td>
</tr>
<tr>
<td>5</td>
<td>Controlled-contact training drills</td>
<td>60 to 90 minutes of time on the field, court or mat for specific drills, Take part in normal practice session, Contact that is normally part of the sport—only use items that “do not hit back” such as a sled in football, Recheck for symptoms or problems often</td>
<td>Free play, Run and jump as able, Full return to PE, Recheck for symptoms or problems often</td>
<td>Mimic the sport or free play without the risk of head injury</td>
</tr>
<tr>
<td>6</td>
<td>Full-contact practice</td>
<td>After OK from the doctor, may take part in normal training activities</td>
<td>With parent or adult supervision, may take part in normal activities</td>
<td>Build confidence, Assess skills</td>
</tr>
<tr>
<td>7</td>
<td>Return-to-Play</td>
<td>Normal game play</td>
<td>Normal playtime and activities</td>
<td>No restrictions</td>
</tr>
</tbody>
</table>

Maximum heart rate is determined by subtracting the athlete's age from 220 and multiplying by the percentage. For example:
- Your target or ideal heart rate for exercise during Stage 2 is usually 30 to 40 percent of your maximum heart rate.
- To find your maximum heart rate, subtract your age from 220.
- If you are 15 years old, subtract 15 from 220 = 205.
  Next, multiply that number by 30 and 40 percent. This will give you a target heart range for exercise in Stage 2.
  - 205 times 30 percent = 62 beats a minute.
  - 205 times 40 percent = 82 beats a minute.
- This means that your target heart range for exercise in Stage 2 is between 62 and 82 beats a minute.

- Allow 24 hours between each activity stage in the chart. **This means it will take at least seven days to return to full activity.**
- For your child to move from one stage to the next, he must be able to do an activity at 100 percent without symptoms or problems for 24 hours.
- If any symptoms return, it means his brain is not ready for the next stage and should drop back to the previous stage.
- Once your child has no symptoms again for 24 hours, he can try the activities in that stage again.

Mild head injury and concussion

Patient and family education

This teaching sheet contains general information only. Talk with your child’s doctor or a member of your child’s healthcare team about specific care for your child.

Mild head injury

Head injuries may vary from mild (temporary confusion or passing out) to severe (coma for a longer period of time). They are caused by trauma such as:
- A hard bump or blow on the head
- A sudden harsh movement or jarring of the head

All head injuries, including mild head injuries, should be taken seriously so that your child’s brain can heal completely.

Concussion

A concussion is a type of head injury that most often cannot be found using imaging tests. Some concussions are mild, and most people have a full recovery; others are severe. Early care and monitoring are important to prevent long-term complications.

Symptoms

Common symptoms of concussion can occur right away or awhile after the injury. Symptoms may include one or more of these:
- Headache
- Nausea or vomiting
- Being really tired or drowsy
- Sensitivity to noise and light
- Numbness or tingling anywhere on the body
- Dizziness
- Loss of balance or trouble walking
- Being irritable or more fussy than usual
- Feel more emotional, such as very sad or nervous
- Change in sleeping patterns
- Trouble seeing, such as double vision, seeing spots or not being able to see at all
- Trouble thinking clearly or having a hard time concentrating and remembering

First 48 hours

- Watch closely for signs of problems during the first 48 hours after the injury. Follow the doctor’s advice about recovering at home.
- Eat a healthy diet and drink more clear fluids than normal. Even though your child may not feel like eating, offer small amounts of food and fluids every three to four hours and before bed. Not eating or drinking enough during this time may delay healing.
- Follow the cognitive rest instructions in the treatment section on Page A-5.

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:
- Headaches get worse
- Clear drainage from the nose or ear
- Scalp swelling that gets bigger
- Seizure
- Neck pain
- Is hard to wake up
- Vomits more than two times in 24 hours
- Acts differently than usual, such as if he does not play, acts fussy or seems confused
- Cannot think clearly or remember things
- Has weakness in the arms or legs or does not move them as usual
- Cannot recognize people or places
- Slurred speech
- Passes out

Call if you have any questions or concerns about how your child looks or feels.
**Mild head injury and concussion**

Patient and family education

**What is the Concussion Program?**

Children's has a Concussion Program made up of a team of specialists to help care for children with concussions. The team works with your child's doctor to create a treatment plan for your child. Talk with your child's regular doctor about your child's need for this program.

The Concussion Program nurse can help you get an appointment and provide you with advice until your child is seen by the concussion team.

- The phone number for the Concussion Program nurse is 404-785-KIDS (5437).
- The nurse is available during normal business hours Monday through Friday.
- If you call after 3 p.m. or on weekends or holidays, leave a message and the nurse will call you back the next business day.
- The website for the Concussion Program is choa.org/concussion.

**Treatment**

Follow up with your child's primary care physician for treatment advice and for school excuses, academic accommodations and return-to-play instructions.

Rest, both cognitive (for the brain) and physical (for the body), is the best treatment. This type of rest can be frustrating and seem long but is needed to help your child's brain heal.

Most children with a concussion can rest and get better at home. See the chart on the following pages for more details about your child's return to school and return to play. Some general guidelines for rest and treatment for your child include:

- Limit physical activities like active play, PE classes and sports. As your child gets better, he will slowly be able to do more.
- Keep surroundings calm and quiet.
- Be sure to keep your child's doctor appointments, even if he is feeling better. Your doctor can track your child's recovery and safe return to normal activities.
- Limit thinking activities like reading, schoolwork, electronic games, talking on the phone and watching TV. Limit screen time to no more than two hours a day. This includes TV, video games, computers and cellphones. Stop and rest any time symptoms get worse.

**Your child may:**

<table>
<thead>
<tr>
<th>Do not let your child:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read easy books.</td>
</tr>
<tr>
<td>Rest in a quiet room without bright lights.</td>
</tr>
<tr>
<td>Listen to music at a low volume.</td>
</tr>
<tr>
<td>Do simple arts and crafts.</td>
</tr>
<tr>
<td>Have short visits with one or two friends.</td>
</tr>
<tr>
<td>Play easy card games and board games that do not need much focus such as Uno or Go Fish.</td>
</tr>
<tr>
<td>Play nonviolent video games that do not need physical activity.</td>
</tr>
<tr>
<td>Use the computer for a short time to check social media.</td>
</tr>
<tr>
<td>Watch TV shows that do not need much focus, such as cartoons or comedies. Watching sports on TV with a small group is OK as long as it is not too noisy or exciting.</td>
</tr>
</tbody>
</table>
Mild head injury and concussion

Patient and family education

**Medicines**

Do not give your child any medicines that can make him sleepy, such as cold or strong pain medicines or medicine for itching unless advised by your child’s doctor.

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

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

**Preventing head injuries**

Avoid activities that put your child or teen at risk for another head injury soon after the first one. Examples include things like climbing toys, riding a bike 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 your baby on a chair, table or other high place while he is 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 prevent them from tipping over on your child. Use anti-tip brackets if needed.
- Lock windows and screens. 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 his 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.
Mild head injury and concussion

Patient and family education

Children

• Watch your child closely on 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 he rides in a vehicle. Children under 13 years old are safer in the back seat.
• Make sure your child wears the correct helmet when he rides a bike, skateboards or takes part in other active sports.
• All terrain vehicles (ATVs) should only be used by teens age 16 and older. They need to wear a motorcycle-style helmet and should never have passengers on the ATV with them.

Returning to school, play and sports

• Review the details below for return-to-learn (Page A-8) and return-to-play and sports guidelines (Page A-9).
• Allow at least 24 hours for each stage of healing. This means that it will take at least seven days to return to full activity.
• To move from one state to the next, your child must be without symptoms or problems for 24 hours.
• If any symptoms return when moving to the next stage, the brain is not ready for that next stage. Return to the previous stage. Once your child has no symptoms again for 24 hours, he can try the activities in that stage again.
• Your child must return to normal schoolwork and studies before returning to game play. You must also have a doctor’s OK for your child to return to sports and PE.
• Do not attempt any sports or activities until your child has no symptoms.
• Wait for your doctor to say that it is OK for your child to return to sports.
• As your child begins to feel better and they can tolerate a full school day with minimal symptoms, it may be appropriate for them to attend and watch a practice or game and even participate in low-risk, sport-specific drills as long as these activities don’t worsen the symptoms.
# Mild head injury and concussion

## Patient and family education

## Return-to-learn guidelines

<table>
<thead>
<tr>
<th>Stage of healing</th>
<th>Home activity</th>
<th>School activity</th>
<th>Physical activity</th>
</tr>
</thead>
</table>
| **Stage 1**—Your child still has many symptoms and problems. | • Complete rest in a quiet room  
• Allow as much sleep as possible  
• Limit things that require your child to think, focus, reason or remember  
• Remove any electronics and computers from your child’s room  
• Remove any activity planners and to-do lists from your child’s room  
• Give your child plenty of fluids to drink  
• Feed small, frequent meals during the day and at bedtime  
• Give your child plenty of carbohydrates to eat, such as whole grain breads and cereals, pasta and rice | • Your child may not go to school. It is typical to rest for 24 to 48 hours and monitor if symptoms improve | See Stage 1 in next chart |
| **Stage 2**—Your child still has some symptoms and problems. | • Stay in quiet rooms  
• Allow for enough sleep—at least eight hours  
• Allow your child to use TV, video games, texting, tweeting and email for a short time—less than two hours a day; for example, he might have 20 minutes of brain work followed by a one-hour brain break  
• Help your child not to stress over missed schoolwork  
• Continue with fluids, small frequent meals and carbohydrates, as in Stage 1  
• As your child has less symptoms, begin adding homework in short sittings to avoid falling behind | • Return to school for half days  
• Attend core classes only or have shortened class time  
• Rest in the nurse’s office between classes, as needed  
• Your child may not take tests or quizzes  
• Use pre-printed class notes  
• Complete short homework assignments—work 20 minutes at a time with rest breaks in between  
• Talk with the school nurse or teacher about academic accommodations from your doctor and create a plan  
• Avoid very loud noises like music and noise in cafeterias, at PE and recess | See Stages 2-3 in next chart |
| **Stage 3**—Your child’s symptoms and problems have gone away. | • Slowly return to watching TV, playing video games and texting  
• Allow family interactions again  
• Continue with fluids, small frequent meals and carbohydrates, as in Stage 1 | • Your child may gradually return to a full day of classes  
• He may need to schedule make-up work, tests and quizzes  
• He may take one test or quiz a day with extra time, as needed, to complete  
• Tell the school nurse or teacher if any symptoms or problems return | See Stages 2-4 in next chart |
| **Stage 4**—Your child seems back to normal. | • Your child may have near-normal home and social interactions | • Your child may begin to complete past assignments and become caught up | See Stages 5 and 6 in next chart |
| **Stage 5**—Your child may return to full activities. | • Your child may return to normal home and school interactions with five days of no symptoms | • Your child may return to normal school function without the need for extra accommodations or restrictions | See Stage 7 in next chart |
# Mild head injury and concussion

## Patient and family education

## Return-to-play and sports guidelines

<table>
<thead>
<tr>
<th>Stage of healing</th>
<th>Activity allowed</th>
<th>Examples of sports</th>
<th>Examples of other activities</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>- No activity</td>
<td>- Complete physical rest</td>
<td>- Quiet time with rest</td>
<td>- Brain rest and healing</td>
</tr>
<tr>
<td></td>
<td>- Complete cognitive and physical rest</td>
<td></td>
<td>- Avoid groups, videos, reading, computers, video games, cellphones, noisy places</td>
<td>- BE FREE OF SYMPTOMS</td>
</tr>
<tr>
<td>2</td>
<td>- Light aerobic activity</td>
<td>- 10 to 15 minutes of walking or stationary bike</td>
<td>- Walk in park or neighborhood</td>
<td>- Increase heart rate to 30 to 40 percent at most</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Light sweat on the brow</td>
<td>- Avoid group activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Slight increase in breathing rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>- Moderate aerobic activity</td>
<td>- 20 to 30 minutes of jogging or stationary bike</td>
<td>- Supervised play</td>
<td>- Increase heart rate to 40 to 60 percent at most</td>
</tr>
<tr>
<td></td>
<td>- Light resistance training</td>
<td>- Arm curls, shoulder raises, or leg lifts with weights that can be comfortably lifted</td>
<td>- Low risk activities such as dribbling a ball, playing catch, changing directions, jumping, side-to-side slides, chasing a ball or catching a ball on the run</td>
<td>- Add resistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- One set of 10 repetitions for each activity</td>
<td>- Increase heart rate to 40 to 60 percent at most</td>
<td>- Use eyes to track objects</td>
</tr>
<tr>
<td>4</td>
<td>- Intense aerobic activity</td>
<td>- 40 to 60 minutes of running or stationary bike</td>
<td>- Supervised play</td>
<td>- Increase heart rate to 60 to 80 percent at most</td>
</tr>
<tr>
<td></td>
<td>- Moderate resistance training</td>
<td>- Same resistance exercises with weight for three sets of 10 reps</td>
<td>- Moderate risk activities such as balance and agility drills</td>
<td>- Increase resistance</td>
</tr>
<tr>
<td></td>
<td>- Sport-specific exercise</td>
<td>- Pre-competition warm-ups such as passing a soccer ball, throwing a football or doing ladder drills</td>
<td>- No head contact activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Can sweat and breathe heavy</td>
<td>- Can sweat and breathe heavy</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>- Controlled-contact training drills</td>
<td>- 60 to 90 minutes of time on the field, court or mat for specific drills</td>
<td>- Free play</td>
<td>- Mimic the sport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Take part in normal practice session</td>
<td>- Run and jump as able</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Contact that is normally part of the sport—only use items that do not hit back, such as a sled in football</td>
<td>- Full return to PE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Recheck for symptoms or problems often</td>
<td>- Recheck for symptoms or problems often</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>- Full-contact practice</td>
<td>- After OK from the doctor, may take part in normal training activities</td>
<td>- With parent or adult supervision, may take part in normal activities</td>
<td>- Build confidence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Assess skills</td>
</tr>
<tr>
<td>7</td>
<td>- Return to play</td>
<td>- Normal game play</td>
<td>- Normal playtime and activities</td>
<td>- No restrictions</td>
</tr>
</tbody>
</table>
Mild head injury and concussion

Patient and family education

Where can I get more information?

You can get more information on mild head injury and concussion from the following websites:

• American Academy of Neurology: aan.com
• American Academy of Pediatrics: aap.org
• American College of Sports Medicine: acsm.org
• Centers for Disease Control and Prevention: cdc.gov

Children’s Healthcare of Atlanta has not reviewed all of the sites listed as resources and does not make any representations regarding their content or accuracy. Children’s Healthcare of Atlanta does not recommend or endorse any particular products, services or the content or use of any third party websites, or make any determination that such products, services or websites are necessary or appropriate for you or for the use in rendering care to patients. Children’s Healthcare of Atlanta is not responsible for the content of any of the above-referenced sites or any sites linked to these Sites. Use of the links provided on this or other sites is at your sole risk.
Lesión leve de la cabeza y conmoción cerebral

Educación para pacientes y familias

Esta hoja educativa contiene sólo información general. Hable con el médico de su niño o con uno de los integrantes de su equipo de atención médica sobre el cuidado específico para él.

Lesión leve de la cabeza

- Las lesiones de la cabeza pueden variar de leves (confusión temporal o desmayo) a graves (estado de coma durante un largo tiempo).
- Son causadas por traumas como:
  - Un golpe fuerte en la cabeza.
  - Un movimiento súbito o sacudida brusca de la cabeza.
  - Todas las lesiones de la cabeza, inclusive las “leves”, deben tomarse en serio, para que el cerebro de su niño pueda sanar completamente.

Conmoción cerebral

Una conmoción cerebral es un tipo de lesión de la cabeza que la mayoría de las veces no se puede encontrar mediante pruebas de imagenología. Algunas conmociones cerebrales son leves, y la mayoría de la gente tiene una recuperación completa. Otras son graves. La atención temprana y la vigilancia son importantes para prevenir complicaciones a largo plazo.

Síntomas

Los síntomas comunes de una conmoción cerebral pueden ocurrir inmediatamente o un tiempo después de la lesión. Los síntomas pueden incluir uno o más de los siguientes:

- Dolor de cabeza
- Náusea o vómito
- Estar muy cansado o adormilado
- Sensibilidad al ruido y a la luz
- Adormecimiento u hormigueo en cualquier parte del cuerpo
- Mareo
- Pérdida del equilibrio o dificultad para caminar
- Estar irritable o más molesto que de costumbre
- Sentirse más emocional, como muy triste o nervioso
- Cambio en los patrones del sueño
- Dificultad para ver, como visión doble, ver manchas o no ver absolutamente nada
- Dificultad para pensar con claridad o para concentrarse y recordar.

Las primeras 48 horas

- Preste especial atención a los signos de problemas durante las primeras 48 horas después de la lesión.
- Siga las recomendaciones del médico acerca de la recuperación en casa.
- Consuma una dieta saludable y beba más líquidos claros de lo normal. A pesar de que su niño puede no tener ganas de comer, ofrézcale pequeñas cantidades de alimentos y líquidos cada 3 a 4 horas y antes de acostarse. No comer o beber suficiente durante este tiempo puede retrasar la curación.
- Siga las instrucciones cognitiva de descanso en la sección Tratamiento en la página A-13.
Lesión leve de la cabeza y conmoción cerebral

Educación para pacientes y familias

¿Cuándo debo llamar al médico?
Llame al médico si su niño presenta algún síntoma nuevo del que su médico no haya sido informado o si empeoran los síntomas, tales como:

- Dolores de cabeza
- Drenaje de líquido claro por la nariz o los oídos
- Aumenta la inflamación del cuero cabelludo
- Una convulsión
- Dolor del cuello
- Dificultad para despertarse
- Vomita más de 2 veces en 24 horas
- Se comporta de forma diferente de lo habitual, no quiere jugar, está irritable o parece confundido
- No puede pensar con claridad ni recordar cosas
- Tiene debilidad en los brazos o las piernas o no los mueve como de costumbre
- No puede reconocer personas o lugares
- Arrastra las palabras al hablar
- Pierde el conocimiento (se desmaya)

Igualmente, llame si tiene alguna pregunta o preocupación sobre cómo se ve o se siente su niño.

¿Qué es el Programa de Conmoción Cerebral?
Children’s tiene un Programa de Conmoción Cerebral (Concussion Program) con un equipo completo de especialistas que atienden a niños que han sufrido una conmoción cerebral. El equipo trabaja conjuntamente con el médico de su niño para establecer un plan de tratamiento para él. Hable con el médico que atiende al niño regularmente sobre la necesidad de que él sea seguido en ese programa.

La enfermera del Programa de Conmoción Cerebral puede ayudarle a conseguir una cita y le aconsejará qué hacer hasta que el niño sea atendido por el Equipo de Conmoción Cerebral.

- El teléfono de la enfermera es 404-785-KIDS (5473).
- La enfermera está disponible de lunes a viernes en el horario normal de atención de lunes a viernes.
- Si llama después de las 3:00 pm o en fines de semana o días festivos, deje un mensaje. La enfermera le devolverá la llamada el siguiente día hábil.
- La página de Internet del Programa de Conmoción Cerebral es: choa.org/concussion.
Lesión leve de la cabeza y conmoción cerebral

Educación para pacientes y familias

Tratamiento

Lleve a su niño a su proveedor de atención primaria (PAP) para atención de seguimiento y para recibir consejos de tratamiento y cualquier justificación para la escuela, servicios académicos e instrucciones sobre cuándo puede volver a jugar/clase de educación física/ recreo/deportes.

El mejor tratamiento es el descanso, tanto cognitivo (para el cerebro) como físico (para el cuerpo). Este tipo de descanso puede ser frustrante y parecer muy largo, pero es necesario para ayudar a sanar el cerebro del niño.

La mayoría de los niños con una conmoción cerebral pueden descansar y recuperarse en casa. Consulte la tabla en las páginas A-16 y A-17 para más detalles sobre el regreso de su hijo a la escuela y a las tareas, el deporte y el juego. Algunas pautas generales para el descanso y tratamiento de su niño incluyen:

• Limite las actividades físicas como el juego activo, clases de educación física (PE, según sus siglas en inglés) y deportes. A medida que el niño vaya mejorando, irá haciendo más actividades.
• Mantenga el ambiente tranquilo y en silencio.
• Asegúrese de cumplir todas las citas médicas del niño, aunque él ya se esté sintiendo mejor. Su médico puede hacer el seguimiento de su recuperación y decidir cuándo es seguro reiniciar las actividades normales.
• Limite las actividades que exijan pensar como lectura, tareas escolares, juegos electrónicos, hablar por teléfono y ver televisión. Limite el tiempo frente a una pantalla a 2 horas diarias como máximo. Esto incluye televisión, videojuegos, computadoras y teléfonos celulares. Cada vez que los síntomas empeoren hay que parar y descansar.

Su niño puede hacer estas cosas. No permita que su niño haga estas cosas.

<table>
<thead>
<tr>
<th>Leer libros fáciles.</th>
<th>Leer libros difíciles o armar rompecabezas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descansar en una habitación tranquila, sin luces brillantes.</td>
<td>Cosas que requieran pensar y concentrarse mucho.</td>
</tr>
<tr>
<td>Escuchar música a bajo volumen.</td>
<td>Escuchar música a alto volumen.</td>
</tr>
<tr>
<td>Arte y manualidades sencillas.</td>
<td>Enviar o leer mensajes de texto.</td>
</tr>
<tr>
<td>Recibir visitas cortas de 1 o 2 amigos.</td>
<td>Recibir demasiadas visitas.</td>
</tr>
<tr>
<td>Juegos fáciles de cartas o juegos de mesa que no requieran mucha concentración, como Uno o Go Fish.</td>
<td>Jugar videojuegos violentos.</td>
</tr>
<tr>
<td>Videojuegos que no sean violentos ni requieran actividad física.</td>
<td>Jugar videojuegos a alto volumen, de mucha acción y luces centelleantes.</td>
</tr>
<tr>
<td>Utilizar la computadora durante poco tiempo para entrar a los medios sociales como Facebook.</td>
<td>Usar una computadora por más de 30 minutos cada vez.</td>
</tr>
<tr>
<td>Ver programas de televisión que no requieran mucha concentración, como dibujos animados o comedias. Puede ver deportes en la televisión con un grupo pequeño, siempre y cuando no sean muy ruidosos ni muy emocionantes.</td>
<td>Ver programas de televisión de mucha acción con ruido o en los que su niño tenga que concentrarse.</td>
</tr>
</tbody>
</table>
Lesión leve de la cabeza
y conmoción cerebral

Educación para pacientes y familias

**Medicamentos**

A menos que su médico lo indique, no le dé al niño ningún medicamento que le produzca sueño, como medicamentos para el resfriado o para dolores fuertes, ni medicamentos para la comezón.

- Para el dolor, si lo recomienda el médico de su niño, dele acetaminophen (Tylenol u otra marca menos costosa). Siga cuidadosamente las instrucciones que aparecen en la caja o pregunte al médico cuánto le debe dar.
  - No dé al niño más de 5 dosis de acetaminophen en un periodo de 24 horas.
  - No dé acetaminophen a bebés menores de 3 meses de edad, a menos que el médico lo ordene.
- Su médico podría sugerir que no use medicamentos que contengan ibuprofen (Motrin, Advil u otras marcas menos costosas) ni aspirin (aspirina) durante las primeras 24 horas después de una lesión leve de la cabeza o conmoción cerebral.

**Prevención de lesiones de la cabeza**

Evite las actividades que pongan a su niño o adolescente en riesgo de otra lesión después de haber tenido la primera. Por ejemplo, subirse a juguetes, montar en bicicleta o conducir un vehículo siga las pautas a continuación para ayudar a proteger a su niño.

**Bebés**

- Cada vez que su bebé viaje en un vehículo, asegúrese de que vaya en un asiento de seguridad aprobado para niños, o en un asiento elevado “booster”.
- Nunca coloque a su bebé en una silla, mesa u otro lugar alto, mientras él esté en un asiento de seguridad para automóvil o en un portabebé.
- Use las correas de seguridad en mesas de cambiar, carros de supermercado y sillas altas para niños.
- No permita que otros niños carguen a su bebé.
- No utilice andadores con ruedas. Estos pueden volcarse y lastimar al bebé. En su lugar, utilice un centro de actividades sin ruedas.

**Niños que empiezan a caminar**

- Adapte su casa a prueba de niños para protegerlo de caídas.
- Asegure al piso los muebles grandes, televisores y electrodomésticos para prevenir que caigan sobre su niño. De ser necesario, use sujetadores contra caídas.
- Cierre con seguro las ventanas y las mallas. Instale barras de protección en las ventanas para evitar que su niño se caiga, pero que sean de las que se puedan quitar en caso de incendio.
- Coloque puertas de seguridad para niños en la parte superior e inferior de las escaleras, hasta que su niño pueda subirlas y bajarlas por sí mismo sin peligro. Mantenga las escaleras libres de objetos.
- Asegúrese de que su niño pequeño use casco y asiento aprobados cuando vaya en bicicleta con usted.
Lesión leve de la cabeza y conmoción cerebral

Educación para pacientes y familias

Niños
- Vigile a su niño cuidadosamente cuando esté en la zona de juegos de un parque. Fíjese que los juegos estén en buen estado y funcionando bien. La superficie de la zona debe tener por lo menos 12 pulgadas de profundidad de caucho triturado, mantillo o arena fina. Evite las superficies duras como asfalto, concreto, césped o tierra.

Niños mayores y adolescentes
- Asegúrese de que su niño use el cinturón de seguridad cada vez que viaje en un vehículo. Los niños menores de 13 años irán más seguros en el asiento de atrás.
- Asegúrese de que su niño use el casco apropiado cuando monte en bicicleta, en patineta o participe en otros deportes de actividad.
- Solo los adolescentes mayores de 16 años pueden manejar vehículos todo terreno (ATV, según sus siglas en inglés). Deben usar un casco de los que se usan para montar en motocicleta y nunca deben llevar pasajeros.

Regreso a la escuela, juegos y deportes
- Revise los detalles a continuación sobre las Pautas para el Regreso al Aprendizaje (página A-16) y las Pautas para el Regreso al Juego y los Deportes (página A-17).
- Deje transcurrir 24 horas entre cada etapa de la curación. Esto significa que se necesitarán al menos 7 días para regresar a la actividad normal.
- Para que su niño pueda pasar de una etapa a la siguiente, debe estar sin síntomas o problemas durante 24 horas
- Si alguno de los síntomas reaparecen cuando pasa a la siguiente etapa, el cerebro no está preparado para esa próxima etapa. Regrese la etapa anterior. Una vez que su niño no tenga síntomas de nuevo durante 24 horas, puede probar las actividades en esa etapa de nuevo.
- Su niño debe volver a las tareas y a los estudios normales antes de regresar al juego. También debe tener un permiso del médico para que su niño vuelva a practicar deportes y educación física.
- No realice ningún deporte o actividades hasta que su niño no tenga síntomas.
- Igualmente, espero que su médico se lo autorice antes que su niño regrese a practicar deportes.
- NO permita que su hijo vaya a las prácticas sólo para ver.
## Pautas para el regreso al aprendizaje

<table>
<thead>
<tr>
<th>Etapa de curación</th>
<th>Actividades para hacer en casa</th>
<th>Actividades para hacer en la escuela</th>
<th>Actividades físicas</th>
</tr>
</thead>
</table>
| **Etapas 1–Su niño aún tiene muchos síntomas y problemas** | • Descanso total en una habitación tranquila  
• Permitale dormir, tanto como sea posible  
• Limite actividades en las que tenga que pensar, concentrarse, razonar o recordar  
• Saque de la habitación del niño cualquier aparato electrónico y computadoras  
• Saque de la habitación del niño cualquier programador de actividades y listas de “cosas por hacer”  
• Dele de beber abundantes líquidos  
• Dele comidas pequeñas con frecuencia durante el día y a la hora de acostarse  
• Dele de comer muchos carbohidratos, como panes y cereales de granos integrales, pasta y arroz | • Su niño no puede ir a la escuela. Es común descansar de 24 a 48 horas y vigilar si los síntomas mejoran | Ver la etapa 1 en la siguiente tabla |
| **Etapas 2–Su niño aún tiene algunos síntomas y problemas** | • Permanecer en una habitación tranquila  
• Permitale dormir lo suficiente (por lo menos 8 horas)  
• Permítale ver TV, jugar videojuegos, enviar mensajes de texto, entrar a twitter y enviar mensajes electrónicos por poco tiempo—menos de 2 horas al día. Por ejemplo, puede utilizar el cerebro por 20 minutos, seguido por un descanso de 1 hora  
• Digale que no se angustie por no haber podido hacer su trabajo escolar  
• Siga dándole líquidos, comidas pequeñas con frecuencia y carbohidratos como en la Etapa 1  
• A medida que su niño tenga menos síntomas, comience a agregar tareas por periodos cortos para evitar que se atrase | • Su niño puede regresar a la escuela por medio día  
• Asistir solamente a las clases básicas, o que el horario de las clases sea más corto  
• Descansar en la enfermería de la escuela entre clases y cuando sea necesario  
• Su niño no puede presentar exámenes ni pruebas  
• Usar notas de clase ya impresas  
• Hacer tareas cortas - trabajar en períodos de 20 minutos, haciendo pausas para descansar  
• Hable con el enfermero o el maestro de la escuela sobre las Adaptaciones Académicas sugeridos por el médico  
• Evite los ruidos muy altos (como la música y aquellos en las cafetería, en la clase de educación física y el recreo) | Ver la etapa 2 en la siguiente tabla |
| **Etapas 3–Los síntomas y problemas de su niño desaparecieron** | • Regrese poco a poco a ver TV, videojuegos y a enviar mensajes de texto  
• Permitale relacionarse nuevamente con la familia  
• Siga dándole líquidos, comidas pequeñas con frecuencia y carbohidratos como en la Etapa 1 | • Su niño gradualmente puede asistir todo el día a clases  
• Podría ser que tenga que programar cuando reponer las tareas, exámenes y pruebas  
• Puede tomar 1 examen o prueba por día con tiempo adicional para terminar, si se necesita  
• Informe al enfermero o maestro de la escuela si le regresa cualquier síntoma o problema | Ver la etapas 4 en la siguiente tabla |
| **Etapas 4– Parece que su niño volvió a la normalidad** | • Si ya ha pasado 5 días sin síntomas, su niño puede regresar a relaciones sociales y familiares normales | • Su niño puede comenzar a reponer las tareas escolares para ponerse al día  
• Complete las tareas atrasadas requeridas | Ver las etapas 5-6 en la siguiente tabla |
| **Etapas 5–Su niño puede regresar a todas sus actividades** | • Si ya ha pasado 5 días sin síntomas, su niño puede regresar a relaciones sociales y familiares normales | • Su niño puede regresar a las funciones escolares normales sin necesidad de servicios adicionales ni restricciones | Ver la etapa 7 en la siguiente tabla |

Esta es información general; no es un consejo médico específico. Si tiene preguntas o inquietudes sobre la salud de un niño, verifique siempre con un médico o un proveedor de salud.

choa.org/concussion

Concussion enfermera: 404-785-KIDS (5437)
### Pautas para el regreso a los deportes y el juego

<table>
<thead>
<tr>
<th>Etapa de curación</th>
<th>Actividad permitida</th>
<th>Ejemplos de deportes</th>
<th>Ejemplos de otras actividades</th>
<th>Objetivo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ninguna actividad</td>
<td>Descanso físico total</td>
<td>Tiempo en silencio, descansando</td>
<td>Descanso y curación del cerebro</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evitar grupos, videos, lectura, computadoras, videojuegos, teléfonos celulares y lugares ruidosos</td>
<td>NO TENER SÍNTOMAS</td>
</tr>
<tr>
<td>2</td>
<td>Ejercicio aeróbico suave</td>
<td>Caminar o montar en una bicicleta estacionaria de 10 a 15 minutos</td>
<td>Caminar en un parque o vecindario</td>
<td>Aumentar el ritmo cardíaco de 30 a 40 por ciento, como máximo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Un poco de sudor en la frente</td>
<td>Evitar actividades en grupo</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aumento leve de la frecuencia respiratoria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ejercicio aeróbico moderado</td>
<td>Trotar o montar en la bicicleta estacionaria de 20 a 30 minutos</td>
<td>Juego supervisado</td>
<td>Aumentar el ritmo cardíaco en un 40 a 60 por ciento, como máximo</td>
</tr>
<tr>
<td></td>
<td>Entrenamiento de resistencia suave</td>
<td>Flexionar los brazos, levantar los hombros o elevar las piernas con pesas fáciles de levantar</td>
<td>Actividades de bajo riesgo como driblar con un balón, lanzar y recibir una pelota, cambiar de dirección, saltar, deslizarse de lado a lado, perseguir una pelota o atraparla mientras corre</td>
<td>Ganar resistencia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 serie de 10 repeticiones con cada actividad</td>
<td></td>
<td>Seguir objetos con la mirada</td>
</tr>
<tr>
<td>4</td>
<td>Ejercicio aeróbico intenso</td>
<td>Correr o montar en una bicicleta estacionaria de 40 a 60 minutos</td>
<td>Juego supervisado</td>
<td>Aumentar el ritmo cardíaco de 60 a 80 por ciento, como máximo</td>
</tr>
<tr>
<td></td>
<td>Entrenamiento de resistencia moderado</td>
<td>Los mismos ejercicios de resistencia con pesas. Hacer 3 series de 10 repeticiones</td>
<td>Actividades de riesgo moderado, como prácticas de equilibrio y agilidad</td>
<td>Aumentar la resistencia</td>
</tr>
<tr>
<td></td>
<td>Ejercicio específico a deportes</td>
<td>Calentamiento antes de una competencia como hacer pases con un balón de fútbol, lanzar una pelota de fútbol americano o hacer ejercicios de escalera</td>
<td>No hacer actividades de contacto con la cabeza</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Puede sudar abundantemente y respirar pesadamente</td>
<td>Puede participar en actividades normales con la supervisión de un padre o un adulto</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Prácticas de entrenamiento de deportes de contacto - controladas</td>
<td>60 a 90 minutos en el campo, la cancha o colchoneta, haciendo ejercicios específicos</td>
<td>Juego libre</td>
<td>Imitar el deporte o juego libre, evitando el riesgo de lesionarse la cabeza</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participar en una sesión normal de práctica</td>
<td>Correr y saltar, lo que pueda</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contactos que sean normales para un deporte - no usar artículos que “reboten” como los empleados en entrenamientos de fútbol americano</td>
<td>Regresar completamente a clases de educación física (PE, según sus siglas en inglés)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continua vigilancia de síntomas o problemas</td>
<td>Continua vigilancia de síntomas o problemas</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Práctica completa de deportes de contacto</td>
<td>Cuando el médico lo autorice puede participar en actividades normales de entrenamiento</td>
<td>Puede participar en actividades normales con la supervisión de un padre o un adulto</td>
<td>Adquirir confianza</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Evaluar destrezas</td>
</tr>
<tr>
<td>7</td>
<td>Regresar al juego</td>
<td>Juego normal</td>
<td>Juego y actividades de costumbre</td>
<td>Ninguna restricción</td>
</tr>
</tbody>
</table>
Lesión leve de la cabeza y conmoción cerebral

Educación para pacientes y familias

¿Dónde puedo obtener más información?

Usted puede obtener más información sobre lesión leve de la cabeza y conmoción cerebral en cualquiera de los siguientes sitios de Internet:

- American Academy of Neurology: aan.com
- American Academy of Pediatrics: aap.org
- American College of Sports Medicine: acsm.org
- Centers for Disease Control and Prevention: cdc.gov

Children’s Healthcare of Atlanta no ha revisado todos los sitios de Internet aquí presentados como recursos ni garantiza el contenido o precisión de los mismos. Children’s Healthcare of Atlanta no recomienda ni respalda ningún producto, servicio en particular, ni el contenido o uso de ningún sitio de Internet de terceros; tampoco determina que tales productos, servicios o sitios de Internet sean necesarios o adecuados para usted o para el uso en el cuidado de pacientes. Children’s Healthcare of Atlanta no se hace responsable del contenido de ninguno de los sitios arriba mencionados ni de ningún sitio vinculado a los mismos. El uso de los enlaces (links) aquí proporcionados o de otros sitios de Internet queda bajo su propio riesgo.
### Return to physical activity following a concussion

#### Baseball/softball

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Baseball/softball-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1  | • No physical activity  
• Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2  | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3  | • Moderate aerobic activity  
• Light resistance training | • 20 to 30 minutes of jogging  
• Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4  | • Noncontact baseball/softball-specific drills | • Interval throwing program, bullpen pitching, fielding ground balls, double plays, catching fly balls, running bases, pick-off attempts, catcher coming out of the crouch, dry cuts, bunting, hitting off the tee | • Maximize aerobic activity  
• Accelerate to full speed with change of directions (cuts)  
• Introduce rotational head movements  
• Monitor for symptoms |
| 5  | • Limited contact baseball/softball drills | • Hitting off a pitching machine with progression to live batting practice | • Maximize aerobic activity  
• Add deceleration/rotational forces in controlled setting  
• Monitor for symptoms |
| 6  | • Full practice  
(after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
• Monitor for symptoms |
| 7  | • Return to play | • Normal game play | • Assess frequently  
• Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.  
May begin Stage 3 when a full school day is tolerated.  
May progress to the next stage every 24 hours as long as symptoms do not worsen.  
Always wear a batting helmet when around hitting or batting area.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Return to physical activity following a concussion

### Basketball

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Basketball-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
       • Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
       • Light resistance training | • 20 to 30 minutes of jogging  
       • Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4     | • Noncontact basketball-specific drills | • Passing, dribbling, stationary shooting (progress to jump shots), individual post moves, solo rebounding, tip drill, lay-up drill, three man weave, defensive slides, suicides, shadowing plays | • Maximize aerobic activity  
       • Accelerate to full speed with change of directions (cuts)  
       • Introduce rotational head movements  
       • Monitor for symptoms |
| 5     | • Limited contact basketball drills | • Post moves and rebounding with pad contact (progress to player contact) | • Maximize aerobic activity  
       • Add deceleration/rotational forces in controlled setting  
       • Monitor for symptoms |
| 6     | • Full practice (after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
       • Monitor for symptoms |
| 7     | • Return to play | • Normal game play | • Assess frequently  
       • Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.  
May begin Stage 3 when a full school day is tolerated.  
May progress to the next stage every 24 hours as long as symptoms do not worsen.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Return to physical activity following a concussion

### Cheerleading

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Cheerleading-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | No physical activity  
Complete physical and cognitive rest | No activity | Recovery and elimination of concussion symptoms |
| 2     | Light aerobic activity | 10 to 15 minutes of walking at home or gym, or stationary bike | Add light aerobic activity and monitor for symptom return |
| 3     | Moderate aerobic activity  
Light resistance training | 20 to 30 minutes of jogging  
Light conditioning | Increase aerobic activity  
Monitor for symptoms |
| 4     | Vertical work  
No inversion | Moderate conditioning  
Jumps (toe touch, Herkie, double hook)  
15-yard sprints (as in a tumbling pass)  
Stunting with feet on ground  
No tumbling or inversion | Maximize aerobic activity  
Introduce rotational head movements  
Monitor for symptoms |
| 5     | Intro level tumbling | Round-off  
Walkovers  
Handspring (one)  
Light tumbling  
Non-inverted lifts (Liberty, Kewpie)  
Cradle catch | Maximize aerobic activity  
Add deceleration/rotational forces in controlled setting  
Introduce inversion (vestibular stress)  
Monitor for symptoms |
| 6     | Full practice (after medical clearance) | Normal training activities | Frequent assessments throughout the practice  
Monitor for symptoms |
| 7     | Unrestricted workouts | Return to competition | Assess frequently  
Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.  
May begin Stage 3 when a full school day is tolerated.  
May progress to the next stage every 24 hours as long as symptoms do not worsen.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.

[choa.org/concussion](http://choa.org/concussion)  
[404-785-KIDS (5437)](tel:404-785-KIDS)

This is general information and not specific medical advice. Always consult with a doctor or healthcare provider if you have any questions or concerns about the health of a child.
# Return to physical activity following a concussion

## Football

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Football-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No physical activity</td>
<td>No activity</td>
<td>Recovery and elimination of symptoms</td>
</tr>
<tr>
<td>2</td>
<td>Light aerobic activity</td>
<td>10 to 15 minutes of walking at home or field, or stationary bike</td>
<td>Add light aerobic activity and monitor for symptom return</td>
</tr>
<tr>
<td>3</td>
<td>Moderate aerobic activity Light resistance training</td>
<td>20 to 30 minutes of jogging with helmet Light weight lifting (one set of 10 reps)</td>
<td>Increase aerobic activity and monitor for symptom return</td>
</tr>
<tr>
<td>4</td>
<td>Noncontact football-specific drills</td>
<td>Moving in and out of three-point stance, bear crawls through tunnel, tires, step-over bags (vertical and lateral), QB/center exchange, QB drop-backs, passing, break-downs and plant, jump cuts, backpedaling, match the hips, up/downs</td>
<td>Maximize aerobic activity Accelerate to full speed with change of directions (cuts) Introduce rotational head movements Monitor for symptoms</td>
</tr>
<tr>
<td>5</td>
<td>Limited contact football drills</td>
<td>Stage 4 workout in full pads Hit/push pads then sled (focus on technique—head up, square up, stay low), step and hit, run and hit, leverage drill, punch drill</td>
<td>Maximize aerobic activity Add deceleration/rotational forces in controlled setting Monitor for symptoms</td>
</tr>
<tr>
<td>6</td>
<td>Full contact practice (after medical clearance)</td>
<td>Normal training activities</td>
<td>Frequent assessments throughout the practice Monitor for symptoms</td>
</tr>
<tr>
<td>7</td>
<td>Return to play</td>
<td>Normal game play</td>
<td>Assess frequently Monitor for symptoms Consider one side of the ball only, no special-teams play</td>
</tr>
</tbody>
</table>

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day. May begin Stage 3 when a full school day is tolerated. May progress to the next stage every 24 hours as long as symptoms do not worsen. It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.

[choa.org/concussion](http://choa.org/concussion)  404-785-KIDS (5437)
## Return to physical activity following a concussion

### Gymnastics

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Gymnastic-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
• Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or gym, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
• Light resistance training | • 20 to 30 minutes of jogging  
• Light conditioning | • Increase aerobic activity and monitor for symptom return |
| 4     | • Vertical work  
• L1-2–Handstands, choreography on low beam, no jumps or turns, swings on bar, no vault  
• L3-4–Vault run with peel off, glide swings on bars, cast to block on bar, tap swings  
• L5-6–Cast above horizontal  
• L7-8–Cast to HS return to block  
• L9+–As above  
• Note: It is acceptable of a higher level to perform a lower level skill | • Maximize aerobic activity  
• Introduce rotational head movements  
• Monitor for symptoms | |

Continued on next page
## Return to physical activity following a concussion

### Gymnastics (continued)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Exercise Objective of the Stage</th>
<th>Monitor for Symptoms</th>
<th>Frequent Assessments Throughout the Practice</th>
<th>Maximize Aerobic Activity</th>
<th>Add Deceleration/Rotational Forces in Controlled Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Intro level tumbling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L1-2—Cartwheel, bridge kick-overs, backward and forward rolls, jumps and leaps, turns and spins, competition vault, round-off on tumble track</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L3-4—Walkovers, backward roll to HS, vault drills—no full vaults, round-off, kips on bars, back and front hip circles, front and back HS on tumble track</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L5-6—Clear hips, stalder, sole circles, long hang pullover, tumbling on tumble track with saltos</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L7-8—Giants on bars, handsprings on vault, back handsprings on low beam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L9+-Straight tumbling on tumble track no twisting (may progress to full twist provided symptom free), no releases on bars. Handsprings on vault, Yurchenko timers (vaulting preferably into pit)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Full practice (after medical clearance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal training activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Unrestricted workouts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Return to competition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.

May begin Stage 3 when a full school day is tolerated.

May progress to the next stage every 24 hours as long as symptoms do not worsen.

It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.

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choa.org/concussion  404-785-KIDS (5437)

This is general information and not specific medical advice. Always consult with a doctor or healthcare provider if you have any questions or concerns about the health of a child.

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## Return to physical activity following a concussion

### Ice hockey

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Ice hockey-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
• Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
• Light resistance training | • 20 to 30 minutes of skating with helmet and gloves  
• Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4     | • Noncontact ice hockey-specific drills | • Skating backward and (all ages) laterally (8 and over), skating with the puck, stick handling, face off, passing, shooting, shadow positioning, goal keeper positioning | • Maximize aerobic activity  
• Accelerate to full speed with change of directions (cuts)  
• Introduce rotational head movements  
• Monitor for symptoms |
| 5     | • Limited contact ice hockey drills | • Checking against pad (10 and over); progress to back in and cut-off drill, curls, forecheck drill, open ice stand-up drill | • Maximize aerobic activity  
• Add deceleration/rotational forces in controlled setting  
• Monitor for symptoms |
| 6     | • Full practice  
(after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
• Assess frequently during line changes  
• Monitor for symptoms |
| 7     | • Return to play | • Normal game play | • Assess frequently  
• Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.
May begin Stage 3 when a full school day is tolerated.
May progress to the next stage every 24 hours as long as symptoms do not worsen.
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Return to physical activity following a concussion

### Lacrosse (boys)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Lacrosse-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | - No physical activity  
      - Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | - Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | - Moderate aerobic activity  
      - Light resistance training | • 20 to 30 minutes of jogging with helmet and gloves  
      • Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4     | - Noncontact lacrosse-specific drills | • Cradling, catching, scooping, fielding ground balls, shooting, change of direction, give and go, waterfall drill, hamster drill, pinwheel drill, eagle eye drill  
      *Start with helmet and gloves, progress to full pads if symptom-free | • Maximize aerobic activity  
      • Accelerate to full speed with change of directions (cuts)  
      • Introduce rotational head movements  
      • Monitor for symptoms |
| 5     | - Limited contact lacrosse drills | • Riding after the shot, riding off the end line, pick and roll, 1 v 1 scramble, 3 v 2, 3 v 4  
      *Full pads | • Maximize aerobic activity  
      • Add deceleration/rotational forces in controlled setting  
      • Monitor for symptoms |
| 6     | - Full practice (after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
      • Assess frequently during line changes  
      • Monitor for symptoms |
| 7     | - Return to play | • Normal game play | • Assess frequently  
      • Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.  
May begin Stage 3 when a full school day is tolerated.  
May progress to the next stage every 24 hours as long as symptoms do not worsen.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Return to physical activity following a concussion

### Lacrosse (girls)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Lacrosse-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
       • Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
       • Light resistance training | • 20 to 30 minutes of jogging with stick  
       • Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4     | • Lacrosse-specific drills | • Cradling, catching, scooping, fielding ground balls, shooting, change of direction, give and go, waterfall drill, hamster drill, pinwheel drill, eagle eye drill | • Maximize aerobic activity  
       • Accelerate to full speed with change of directions (cuts)  
       • Introduce rotational head movements  
       • Monitor for symptoms |
| 5     | • Limited-contact lacrosse drills | • Riding after the shot, riding off the end line, pick and roll, 1 v 1 scramble, 3 v 2, 3 v 4  
       *Wearing goggles | • Maximize aerobic activity  
       • Add deceleration/rotational forces in controlled setting  
       • Monitor for symptoms |
| 6     | • Full practice (after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
       • Assess frequently during line changes  
       • Monitor for symptoms |
| 7     | • Return to play | • Normal game play | • Assess frequently  
       • Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.  
May begin Stage 3 when a full school day is tolerated.  
May progress to the next stage every 24 hours as long as symptoms do not worsen.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.

[choa.org/concussion](http://choa.org/concussion) | [404-785-KIDS (5437)](tel:404-785-KIDS)
Return to physical activity following a concussion

Soccer

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Soccer-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
• Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
• Light resistance training | • 20 to 30 minutes of jogging  
• Light weight lifting (one set of 10 reps) | • Increase aerobic activity and monitor for symptom return |
| 4     | • Noncontact soccer-specific drills | • Inside/ outside, top tapping the ball, dribbling in a straight line, dribbling around cones, chipping, goalkeeper punts, goalkeeper catches, long and short passing (inside foot and instep), shooting, volleys | • Maximize aerobic activity  
• Accelerate to full speed with change of directions (cuts)  
• Introduce rotational head movements  
• Monitor for symptoms |
| 5     | • Limited contact soccer drills | • Ball-tossed headers from knees (progress to standing then jumping), goalkeeper dives from knees (progress to standing), 1-on-1 (progress to 2-on-2, 3-on-3, etc.) | • Maximize aerobic activity  
• Add deceleration/rotational forces in controlled setting  
• Monitor for symptoms |
| 6     | • Full practice  
(after medical clearance) | • Normal training activities | • Frequent assessments throughout the practice  
• Monitor for symptoms |
| 7     | • Return to play | • Normal game play | • Assess frequently  
• Monitor for symptoms |

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.

May begin Stage 3 when a full school day is tolerated.

May progress to the next stage every 24 hours as long as symptoms do not worsen.

It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Return to physical activity following a concussion

### Swimming

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Swimming-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Complete physical and cognitive rest</td>
<td>• No activity</td>
<td>• Recovery and elimination of concussion symptoms</td>
</tr>
<tr>
<td>2</td>
<td>• Light aerobic activity</td>
<td>• 20 minutes of activity once a day: (either, not both)  - Water-based: Kicking with a kickboard 55 to 65 percent of age-appropriate max heart rate  - Land-based: Use bike or elliptical, 55 to 65 percent of age-appropriate max heart rate  Avoid treadmill  • May use fins as needed</td>
<td>• Monitor for symptoms</td>
</tr>
<tr>
<td>3</td>
<td>• Moderate aerobic activity  • Light resistance training</td>
<td>• 30 minutes in water once a day:  - 65 to 70 percent of age-appropriate max heart rate  - All four strokes  - Open turns only  • May use appropriate equipment within stage activity parameters</td>
<td>• Increase aerobic activity  • Monitor for symptoms</td>
</tr>
<tr>
<td>4</td>
<td>• Noncontact training</td>
<td>• 30 minutes in water once a day:  - More complex interval training  - All four strokes  - Add coordination and cognitive load  - 70 to 80 percent of age-appropriate max heart rate  - Open turns only  - Dryland activity once a day:  - Add 15 minutes of simple dryland activity (circuit of sit-ups, push-ups, squats, pull-ups, bounding, medicine ball throws, etc.)  • May use appropriate equipment within stage activity parameters</td>
<td>• Increase aerobic training  • Introduce different head positions  • Monitor for symptoms</td>
</tr>
<tr>
<td>5</td>
<td>• Limited practice</td>
<td>• 60 minutes in water once a day:  - Continue interval training  - All four strokes  - Increase coordination and cognitive load  - 70 to 80 percent of age-appropriate max heart rate  - Dryland activity once a day:  - Add 15 minutes of simple dryland activity (circuit of sit-ups, push-ups, squats, pull-ups, bounding, medicine ball throws, etc.)  - Add in starts off block at this stage  • May use appropriate equipment within stage activity parameters</td>
<td>• Maximize aerobic training  • Maximize acceleration/deceleration forces  • Monitor for symptoms</td>
</tr>
<tr>
<td>6</td>
<td>• Full practice (after medical clearance)</td>
<td>• Normal training activities  • Introduce flip turns  • May use appropriate equipment within stage activity parameters</td>
<td>• Monitor for symptoms  • Introduce rotational head movements</td>
</tr>
<tr>
<td>7</td>
<td>• Return to competition</td>
<td>• Unrestricted workouts or competition in meets</td>
<td>• Assess frequently throughout practice and/or competition</td>
</tr>
</tbody>
</table>

May begin Stage 2 when symptoms are markedly diminished and can tolerate a partial school day.
May begin Stage 3 when a full school day is tolerated.
May progress to the next stage every 24 hours as long as symptoms do not worsen.
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.

[choa.org/concussion](https://choa.org/concussion)  404-785-KIDS (5437)

This is general information and not specific medical advice. Always consult with a doctor or healthcare provider if you have any questions or concerns about the health of a child.
# Return to physical activity following a concussion

## Wrestling

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Wrestling-specific exercise</th>
<th>Objective of the stage</th>
</tr>
</thead>
</table>
| 1     | • No physical activity  
       • Complete physical and cognitive rest | • No activity | • Recovery and elimination of symptoms |
| 2     | • Light aerobic activity | • 10 to 15 minutes of walking at home or field, or stationary bike | • Add light aerobic activity and monitor for symptom return |
| 3     | • Moderate aerobic activity  
       • Light resistance training | • 20 to 30 minutes of jogging  
       • Light weight lifting (one set of 10 reps)  
       • Push-ups, sit-ups, pull-ups | • Increase aerobic activity and monitor for symptom return |
| 4     | • Minimal contact wrestling drills | • Shooting single/double leg, hand fighting, sit-outs from a referee’s position, stand-up escapes from referee’s position, leg riding  
       *All drills done at half speed* | • Maximize aerobic activity  
       • Accelerate to full speed with change of direction  
       • Introduce rotational head movements  
       • Monitor for symptoms |
| 5     | • Limited contact wrestling drills | • Full-speed take downs, break downs, outside carry  
       • Full-speed shots  
       • Pinning combinations | • Maximize aerobic activity  
       • Add deceleration/rotational forces in controlled setting  
       • Monitor for symptoms |
| 6     | • Full practice (after medical clearance) | • Live wrestling | • Frequent assessments throughout the practice  
       • Monitor for symptoms |
| 7     | • Return to play | • Normal game play | • Assess frequently  
       • Monitor for symptoms |

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May progress to the next stage every 24 hours as long as symptoms do not worsen.  
It is recommended that you seek further medical attention if you fail more than three attempts to pass a stage.
## Detailed workout diary

<table>
<thead>
<tr>
<th>Date</th>
<th>Stage</th>
<th>Actual workout</th>
<th>Symptoms? Y/N</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
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