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- Complex Cervical Spine
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- · Limb Differences and Lengthening
- Hand and Upper Extremity
- Brachial Plexus Injuries

- Bone and Soft Tissue Tumors
- Orthopedic Care for Cerebral Palsy
- Orthopedic Trauma
- [U18] Sports Medicine
- Concussion Clinic
- Performing Arts and **Dance Medicine**
- Athletic Training





Children's Hospital for Orthopedics, ranked 18th in the U.S. and

To make an appointment, call 954-265-6300. For more information visit JDCH.com/Ortho.

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# Keys to the Game Hydration Tips

- Proper hydration should start at least 48 to 72 hours before competition.
- Athletes should drink 16 to 24 ounces of water or an electrolyte sports drink two to three hours before competition.
- Athletes should eat a healthy meal that is rich in carbohydrates and sodium two to three hours before competition. Avoid eating high-protein foods or taking supplements.
- Athletes should drink 8 to 12 ounces of water or a sports (electrolyte) drink at least 20 minutes before competition.

- During competition, athletes should drink diluted sports drinks for quicker absorption of electrolytes.
- Drinks that are caffeinated, carbonated, or high in sugar should be stopped at least one hour prior to competition.
- Record athletes' weight before and after practices and games. It's recommended that athletes drink 16 ounces of water or an electrolyte sports drink for every pound lost.

## **Heat-Related Illnesses Signs and Symptoms**

## **Heat Cramps**

- Intense muscular pain, typically in the calf, hamstrings or abdomen
- Persistent muscle contraction that won't stop

### **Heat Exhaustion**

- · Dizziness, nausea, diarrhea
- Fainting
- · Loss of coordination
- Profuse sweating or pale skin
- Vomiting

#### **Heat Stroke**

- Altered consciousness
- Dizziness or weakness
- · Hot dry skin
- · Nausea, diarrhea or vomiting
- · Seizures, confusion

These are general guidelines and should not be considered medical advice. Some of these signs or symptoms may indicate serious health problems. For any questions or concerns, consult a health care professional for advice.





## **Are You Hydrated?**

Why is the urine chart an essential "must-have" in every training area and locker room?

- With normal kidney function, the color of urine can serve as an easy visual indicator of an individual's hydration level.
- The darker the color of urine, the more likely the person is dehydrated.
- Keep in mind that some vitamins and supplements may darken the color of urine.
- To assess your hydration level, simply compare the color of your urine to the colors on the chart.
- Dehydration is often a key contributor to heat-related illnesses.

## **Urine Color Chart**



## CONCUSSION FACT SHEET FOR PARENTS

## WHAT IS A CONCUSSION?

A concussion is a type of traumatic brain injury. Concussions are caused by a bump or blow to the head. Even a "ding," "getting your bell rung," or what seems to be a mild bump or blow to the head can be serious.

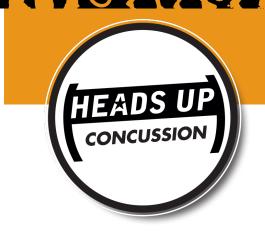
You can't see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury. If your child reports any symptoms of concussion, or if you notice the symptoms yourself, seek medical attention right away.



If your child has experienced a bump or blow to the head during a game or practice, look for any of the following signs of a concussion:

### SYMPTOMS REPORTED BY ATHLETE:

- · Headache or "pressure" in head
- · Nausea or vomiting
- · Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light
- Sensitivity to noise
- Feeling sluggish, hazy, foggy, or groggy
- · Concentration or memory problems
- Confusion
- Just not "feeling right" or is "feeling down"

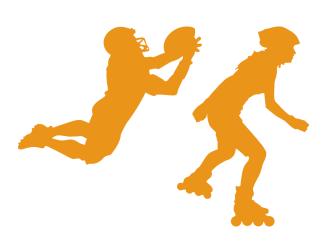


## SIGNS OBSERVED BY PARENTS/ GUARDIANS:

- · Appears dazed or stunned
- Is confused about assignment or position
- · Forgets an instruction
- Is unsure of game, score, or opponent
- · Moves clumsily
- Answers questions slowly
- · Loses consciousness (even briefly)
- · Shows mood, behavior, or personality changes



954-538-5566



### DANGER SIGNS

Be alert for symptoms that worsen over time. Your child or teen should be seen in an emergency department right away if s/he has:

- One pupil (the black part in the middle of the eye) larger than the other
- · Drowsiness or cannot be awakened
- · A headache that gets worse and does not go away
- · Weakness, numbness, or decreased coordination
- Repeated vomiting or nausea
- Slurred speech
- · Convulsions or seizures
- Difficulty recognizing people or places
- · Increasing confusion, restlessness, or agitation
- · Unusual behavior
- Loss of consciousness (even a brief loss of consciousness should be taken seriously)

## WHAT SHOULD YOU DO IF YOU THINK YOUR CHILD HAS A CONCUSSION?

- SEEK MEDICAL ATTENTION RIGHT AWAY
   A health care professional will be able to decide how serious the concussion is and when it is safe for your child to return to regular activities, including sports.
- 2. KEEP YOUR CHILD OUT OF PLAY. Concussions take time to heal. Don't let your child return to play the day of the injury and until a health care professional says it's OK. Children who return to play too soon - while the brain is still healing - risk a greater chance of having a second concussion. Repeat or later concussions can be very serious. They can cause permanent brain damage, affecting your child for a lifetime.
- 3. TELL YOUR CHILD'S COACH ABOUT ANY PREVIOUS CONCUSSION.
  Coaches should know if your child had a previous

concussion. Your child's coach may not know about a concussion your child received in another sport or activity unless you tell the coach.

## HOW CAN YOU HELP YOUR CHILD PREVENT A CONCUSSION OR OTHER SERIOUS BRAIN INJURY?

- Ensure that they follow their coach's rules for safety and the rules of the sport.
- Encourage them to practice good sportsmanship at all times.
- Make sure they wear the right protective equipment for their activity. Protective equipment should fit properly and be well maintained.
- Wearing a helmet is a must to reduce the risk of a serious brain injury or skull fracture.
  - However, helmets are not designed to prevent concussions. There is no "concussion-proof" helmet. So, even with a helmet, it is important for kids and teens to avoid hits to the head.

## HOW CAN I HELP MY CHILD RETURN TO SCHOOL SAFELY AFTER A CONCUSSION?

Children and teens who return to school after a concussion may need to:

- · Take rest breaks as needed
- Spend fewer hours at school
- Be given more time to take tests or complete assignments
- Receive help with schoolwork
- · Reduce time spent reading, writing, or on the computer

Talk with your child's teachers, school nurse, coach, speech-language pathologist, or counselor about your child's concussion and symptoms. As your child's symptoms decrease, the extra help or support can be removed gradually.



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TO LEARN MORE GO TO >> WWW.CDC.GOV/CONCUSSION

## A Fact Sheet for YOUTH SPORTS COACHES

One of the main jobs of a youth sports coach is keeping athletes safe. This sheet has information to help you protect athletes from concussion or other serious brain injury, learn how to spot a concussion, and know what to do if a concussion occurs.

## WHAT IS A CONCUSSION?

A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move quickly back and forth. This fast movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells.

## **HOW CAN I HELP KEEP ATHLETES SAFE?**

Sports are a great way for children and teens to stay healthy and can help them do well in school. As a youth sports coach, your actions create the culture for safety and can help lower an athlete's chance of getting a concussion or other serious injury. Aggressive and/or unsportsmanlike behavior among athletes can increase their chances of getting a concussion or other serious injury. Here are some ways you can help keep your athletes safe:

## Talk with athletes about the importance of reporting a concussion:

 Talk with athletes about any concerns they might have about reporting their concussion symptoms. Make sure to tell them that safety comes first and you expect them to tell you and their parent(s) if they think they have a concussion.

## Create a culture of safety at games and practices:

- Teach athletes ways to lower the chances of getting a concussion.
- Enforce the rules of the sport for fair play, safety, and sportsmanship.
- Ensure athletes avoid unsafe actions such as:
  - Striking another athlete in the head;
  - > Using their head or helmet to contact another athlete;
  - Making illegal contacts or checking, tackling, or colliding with an unprotected opponent; and/or
  - Trying to injure or put another athlete at risk for injury.





Concussion Clinic 954-538-5566



• Tell athletes that you expect good sportsmanship at all times, both on and off the playing field.

### Keep up-to-date on concussion information:

- Review your state, league, and/or organization's concussion quidelines and protocols.
- Take a training course on concussion. CDC offers concussion training at no cost at www.cdc.gov/HEADSUP.
- Download CDC's HEADS UP app or a list of concussion signs and symptoms that you can keep on hand.

#### Check out the equipment and sports facilities:

- Make sure all athletes wear a helmet that fits well and is in good condition when appropriate for the sport or activity.
   There is no "concussion-proof" helmet, so it is important to enforce safety rules that protect athletes from hits to the head and when a helmet falls off during a play.
- Work with the game or event administrator to remove tripping hazards and ensure that equipment, such as goalposts, have padding that is in good condition.

#### Keep emergency contact information handy:

- Make sure all athletes wear a helmet that fits well and is in good condition when appropriate for the sport or activity.
   There is no "concussion-proof" helmet, so it is important to enforce safety rules that protect athletes from hits to the head and when a helmet falls off during a play.
- Work with the game or event administrator to remove tripping hazards and ensure that equipment, such as goalposts, have padding that is in good condition.

## HOW CAN I SPOT A POSSIBLE CONCUSSION?

Athletes who show or report one or more of the signs and symptoms listed below—or simply say they just "don't feel right" after a bump, blow, or jolt to the head or body—may have a concussion or other serious brain injury.

#### **SIGNS OBSERVED BY COACHES OR PARENTS:**

- Appears dazed or stunned.
- Forgets an instruction, is confused about an assignmentor position, or is unsure of the game, score, or opponent
- Moves clumsily.
- · Answers questions slowly.
- · Loses consciousness (even briefly).
- Shows mood, behavior, or personality changes.
- Can't recall events prior to or after a hit or fall.

#### **SYMPTOMS REPORTED BY ATHLETES:**

- · Headache or "pressure" in head.
- Nausea or vomiting.
- Balance problems or dizziness, or double or blurry vision.
- · Bothered by light or noise.
- · Feeling sluggish, hazy, foggy, or groggy.
- Confusion, or concentration or memory problems.
- · Just not "feeling right", or "feeling down".

NOTE: Concussion signs and symptoms often show up soon after the injury, but it can be hard to tell how serious the concussion is at first. Some symptoms may not be noticed or may not show up for hours or days.

## WHAT ARE SOME MORE SERIOUS DANGER SIGNS TO LOOK FOR?

In rare cases, a dangerous collection of blood (hematoma) may form on the brain after a bump, blow, or jolt to the head or body and can squeeze the brain against the skull. Call 9-1-1 or ensure an athlete is taken to the emergency department right away if, after a bump, blow, or jolt to the head or body, he or she has one or more of these danger signs:

- One pupil larger than the other.
- · Drowsiness or inability to wake up.
- A headache that gets worse and does not go away.
- Slurred speech, weakness, numbness, or decreasedcoordination.
- Repeated vomiting or nausea, convulsions or seizures (shaking or twitching).
- Unusual behavior, increased confusion, restlessness, oragitation.
- Loss of consciousness (passed out/knocked out). Even a brief loss of consciousness should be taken seriously.

## CONCUSSIONS AFFECT EACH ATHLETE DIFFERENTLY.

While most athletes with a concussion feel better within a couple of weeks, some will have symptoms for months or longer. Talk with an athlete's parents if you notice their concussion symptoms come back after they return to play.

## WHAT SHOULD I DO IF I THINK AN ATHLETE HAS A POSSIBLE CONCUSSION?

As a coach, if you think an athlete may have a concussion, you

### REMOVE THE ATHLETE FROM PLAY.

When in doubt, sit them out!

## KEEP AN ATHLETE WITH A POSSIBLE CONCUSSION OUT OF PLAY ON THE SAME DAY OF THE INJURY AND UNTIL CLEARED BY A HEALTH CARE PROVIDER.

Do not try to judge the severity of the injury yourself. Only a health care provider should assess an athlete for a possible concussion. After you remove an athlete with a possible concussion from practice or play, the decision about return to practice or play is a medical decision that should be made by a health care provider. As a coach, recording the following information can help a health care provider in assessing the athlete after the injury:

- Cause of the injury and force of the hit or blow to the head or body.
- Any loss of consciousness (passed out/knocked out) and if so, for how long.
- · Any memory loss right after the injury.
- Any seizures right after the injury.
- Number of previous concussions (if any).

## INFORM THE ATHLETE'S PARENT(S) ABOUT THE POSSIBLE CONCUSSION.

Let them know about the possible concussion and give them the HEADS UP fact sheet for parents. This fact sheet can help parents watch the athlete for concussion signs or symptoms that may show up or get worse once the athlete is at home or returns to school.

## ASK FOR WRITTEN INSTRUCTIONS FROM THE ATHLETE'S HEALTH CARE PROVIDER ON RETURN TO PLAY.

These instructions should include information about when they can return to play and what steps you should take to help them safely return to play.

## WHY SHOULD I REMOVE AN ATHLETE WITH A POSSIBLE **CONCUSSION FROM PLAY?**

The brain needs time to heal after a concussion. An athlete who continues to play with concussion has a greater chance of getting another concussion. A repeat concussion that occurs while the brain is still healing from the first injury can be very serious and can affect an athlete for a lifetime. It can even be fatal.

## **SOME ATHLETES MAY NOT REPORT A CONCUSSION BECAUSE THEY DON'T THINK A CONCUSSION IS SERIOUS.**

They may also worry about:

- Losing their position on the team or during thegame.
- · Jeopardizing their future sports career.
- · Looking weak.
- Letting their teammates or the team down.
- · What their coach or teammates might think of

## WHAT STEPS CAN I TAKE TO HELP AN ATHLETE RETURN TO PLAY?

An athlete's return to school and sports should be a gradual process that is approved and carefully managed and monitored by a health care provider. When available, be sure to also work closely with your team's certified athletic trainer.

Below are five gradual steps that you, along with a health care provider, should follow to help safely return an athlete to play. Remember, this is a gradual process. These steps should not be completed in one day, but instead over days, weeks, or months.





### **BASELINE:**

Athlete is back to their regular school activities, is no longer experiencing symptoms from the injury when doing normal activities, and has a green light from their health care provider to begin the return to play process.

An athlete should only move to the next step if they do not have any new symptoms at the current step.

## STEP 1:

Begin with light aerobic exercise only to increase an athlete's heart rate. This means about 5 to 10 minutes on an exercise bike, walking, or light jogging. No weightlifting at this point.

## STEP 2:

Continue with activities to increase an athlete's heart rate with body or head movement. This includes moderate jogging, brief running, moderate-intensity stationary biking, moderate-intensity weightlifting (less time and/or less weight than a typical routine).

## **STEP 3:**

Add heavy non-contact physical activity, such as sprinting/ running, high-intensity stationary biking, regular weightlifting routine, non-contact sport-specific drills (in 3 planes of movement).

## STEP 4:

An athlete may return to practice and full contact (if appropriate for the sport) in controlled practice.

### STEP 5:

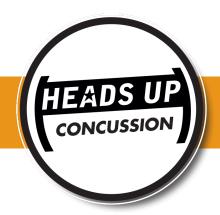
An athlete may return to competition.

### REMEMBER:

It is important for you and the athlete's parent(s) to watch for concussion symptoms after each day's return to play progression activity. If an athlete's concussion symptoms come back, or he or she gets new symptoms when becoming more active at any step, this is a sign that the athlete is pushing him- or herself too hard. The athlete should stop these activities, and the athlete's health care provider should be contacted. After the okay from the athlete's health care provider, the athlete can begin at the previous step.

- 1. Kerr ZY, Register-Mihalik JK, Marshall SW, Evenson KR, Mihalik JP, Guskiewicz KM (2014). Disclosure and non-disclosure of concussion and concussion symptoms in athletes: Review and application of the socio-ecological framework. Brain Inj. 2014;28(8):1009-21.
- 2. Register-Mihalik JK, Guskiewicz KM, McLeod TC, Linnan LA, Mueller FO, Marshall SW. (2013a). Knowledge, attitude, and concussion- reporting behaviors among high school athletes: A preliminary study. J Athl Train, July 12, 2013.
- 3. Chrisman, S. P., Quitiquit, C., Rivara, F. P. (2013). Qualitative Study of Barriers to Concussive Symptom Reporting in High School Athletics. J Adolesc Health. March, 2013, 52(3): 330-335.

## **CONCUSSION FACT SHEET** FOR SCHOOL PROFESSIONALS



## WHAT IS A CONCUSSION?

A concussion is a type of brain injury that changes the way the brain normally works. A concussion is caused by a bump, blow, or jolt to the head. Concussions can also occur from a fall or blow to the body that causes the head and brain to move rapidly back and forth. Even what seems to be a mild bump to the head can be serious.

Children and adolescents are among those at greatest risk for concussion. The potential for a concussion is greatest during activities where collisions can occur, such as during physical education (PE) class, playground time, or schoolbased sports activities. However, concussions can happen any time a student's head comes into contact with a hard object, such as a floor, desk, or another student's head or body. Proper recognition and response to concussion can prevent further injury and help with recovery.

## THE FACTS

- 1. All concussions are serious.
- 2. Most concussions occur without loss of consciousness.
- 3. Recognition and proper response to concussions when they first occur can help prevent further injury or even death.



Children and teens with a concussion should NEVER return to sports or recreation activities on the same day the injury occurred. They should delay returning to their activities until a health care professional experienced in evaluating for concussion says they are symptom-free and it's OK to return to play. This means, until permitted, not returning to:

- · Physical Education (PE) class,
- Sports practices or games, and
- Physical activity at recess.

## **HOW CAN I RECOGNIZE A CONCUSSION?**

Teachers and school counselors may be the first to notice changes in their students. The signs and symptoms can take time to appear and can become evident during concentration and learning activities in the classroom.

Send a student to the school nurse, or another health professional, if you notice or suspect that a student has:

1. Any kind of forceful blow to the head or to the body that results in rapid movement of the head,

## AND

2. Any change in the student's behavior, thinking, or physical functioning. (See the signs and symptoms of concussion.



"WHEN IN DOUBT, SIT THEM OUT!"

## WHAT ARE THE SIGNS AND SYMPTOMS OF A CONCUSSION?

The signs and symptoms of concussion can show up right after an injury or may not appear or be noticed until hours or days after the injury. Be alert for any of the following signs or symptoms. Also, watch for changes in how the student is acting or feeling, if symptoms are getting worse, or if the student just "doesn't feel right."

## **SYMPTOMS REPORTED BY STUDENT:**

#### **EMOTIONAL:**

- Irritable
- Sad
- · More emotional than usual
- Nervous

#### THINKING/REMEMBERING:

- · Difficulty thinking clearly
- · Difficulty concentrating or remembering
- Feeling more slowed down
- · Feeling sluggish, hazy, foggy, or groggy

#### SLEEP\*:

- Drowsy
- Sleeps less than usual
- · Sleeps more than usual
- Has trouble falling asleep
  - \*Only ask about sleep symptoms if the injury occurred on a prior day

#### PHYSICAL:

- · Headache or "pressure" in head
- Nausea or vomiting
- · Balance problems or dizziness
- · Fatigue or feeling tired
- Blurry or double vision
- Sensitivity to light or noise
- · Numbness or tingling
- · Does not "feel right"

## **SIGNS OBSERVED BY SCHOOL STAFF:**

- · Appears dazed or stunned
- Is confused about events
- Answers questions slowly
- · Repeats questions
- · Can't recall events prior to the hit, bump or fall
- · Can't recall events after the hit, bump or fall
- · Loses consciousness (even briefly)
- · Shows behavior or personality changes
- · Forgets class schedule or assignments

#### **DANGER SIGNS**

Be alert for symptoms that worsen over time. A student should be seen in an emergency department right away if s/he has:

- One pupil (the black part in the middle of the eye) larger than the other
- · Drowsiness or cannot be awakened
- A headache that gets worse and does not go away
- · Weakness, numbness, or decreased coordination
- · Repeated vomiting or nausea
- · Slurred speech
- · Convulsions or seizures
- · Difficulty recognizing people or places
- · Increasing confusion, restlessness, or agitation
- Unusual behavior
- Loss of consciousness (even a brief loss of consciousness should be taken seriously)



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## WHAT DO I NEED TO KNOW ABOUT MY STUDENTS RETURNING TO SCHOOL AFTER A CONCUSSION?

Supporting a student recovering from a concussion requires a collaborative approach among school professionals, health care providers, and parents, as s/he may need accommodations during recovery. If symptoms persist, a 504 meeting may be called. Section 504 Plans are implemented when students have a disability (temporary or permanent) that affects their performance in any manner. Services and accommodations for students may include speech-language therapy, environmental adaptations, curriculum modifications, and behavioral strategies.

Students may need to limit activities while they are recovering from a concussion. Exercising or activities that involve a lot of concentration, such as studying, working on the computer, or playing video games, may cause concussion symptoms (such as headache or tiredness) to reappear or get worse.

Check out CDC's Heads Up to Schools Facts Sheet on "Returning Students to School After a Concussion Fact Sheet". For more information: www.CDC.GOV/Concussion

## WHAT TO LOOK FOR AFTER A CONCUSSION:

Students who return to school after a concussion may need to:

- · Take rest breaks as needed,
- Spend fewer hours at school,
- Be given more time to take tests or complete assignments,
- · Receive help with schoolwork, and/or
- · Reduce time spent on the computer, reading, or writing

When students return to school after a concussion, school professionals should watch for:

- · Increased problems paying attention or concentrating
- Increased problems remembering or learning new information
- Longer time needed to complete tasks or assignments
- · Difficulty organizing tasks
- · Inappropriate or impulsive behavior during class
- Greater irritability
- Less able to cope with stress or is more emotional

It is normal for students to feel frustrated, sad, and even angry because they cannot return to recreation or sports right away, or cannot keep up with schoolwork. A student may also feel isolated from peers and social networks. Talk with the student about these issues and offer support and encouragement. As the student's symptoms decrease, the extra help or support can be removed gradually.



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TO LEARN MORE GO TO >> WWW.CDC.GOV/CONCUSSION



## **Concussion Clinic**

We're your team for expert concussion care. 954-538-5566

Whether it's a sports-related or non-sports-related concussion, count on us to deliver quality, coordinated care. We help navigate and expedite appointments with the right pediatric specialists to meet your child's needs:

- Pediatric Sports Medicine
- Pediatric Physical Medicine and Rehabilitation
- Pediatric Neurology
- Pediatric Neuropsychology
- Pediatric Vestibular Rehabilitation
- Pediatric Neurosurgery

If insurance or another healthcare payor does not cover these services, or does not apply, then you can have the following services at the following rates:

\$25.00 for one preseason neurocognitive test, or \$50.00 for one preseason neurocognitive test plus prevention education with a healthcare professional

Payment must be made in advance. These rates are valid until December 31, 2026.



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If you think your child has a concussion – a mild traumatic brain injury – **SEEK IMMEDIATE MEDICAL ATTENTION.**