

# the truth about kids & concussions

It's not just jocks-in-training who are at risk for head blows. Find out why all kids are vulnerable—and how to protect their growing brains

BY GINNY GRAVES PHOTOGRAPHS BY CRAIG CUTLER

**WHEN 9-YEAR-OLD** Callie Tysdal got whacked in the head with a rubber ball during a playground kickball game, she didn't mention the injury to her mom, Natalie. Still, after the girl complained of a headache—for the first time in her life—the Lonetree, CO, mom took Callie to the pediatrician. When the doctor asked Callie if she'd been knocked in the head, the grade-schooler revealed the incident, saying she couldn't remember anything for a while after the ball hit her. "We realized then that she had probably blacked out briefly," recalls Tysdal.

Even though Callie passed a simple eye-tracking test used to screen for concussions, her symptoms got worse over the following weeks: She felt off-balance and got carsick on every drive. At the pediatrician's suggestion, Tysdal took Callie to specialists at Rocky Mountain Hospital for Children in Denver, who diagnosed her with a concussion and put her on a restricted schedule for four weeks.

A year later, Callie is fine, but the injury left her mother feeling concerned about athletic activity. "I want my three kids to be active, but I'm also aware how easy it is to get a brain injury," Tysdal explains.

These days, concussions are on many parents' worry radar—and for good reason: More children are being diagnosed with them than ever before. Between 2001 and 2010, the number of kids ages 5 to 14 who went to the ER for head injuries increased 43 percent, according to the Centers for Disease Control and Prevention (CDC). "That doesn't include all the children who see their doctor instead of going to the ER, aren't formally diagnosed, or who don't seek medical attention at all—a group that we believe is actually quite large," says Christopher Giza, M.D., a pediatric neurologist and founder of the UCLA Steve Tisch BrainSPORT Program, which focuses on concussion research and prevention.

The increase in diagnosis is partly a result of more kids participating in sports overall. But the jump primarily reflects a growing awareness among coaches and other adults. Thanks to a spate of highly publicized studies, doctors now know that blows to the head can be more serious—and require a more lengthy recovery—than anyone appreciated even 10 years ago. That means more people are watching out to make sure kids who get hit in the noggin are identified and treated right away. (See "Symptoms to Watch For" on p. 63.)

As comforting as that is, you may still be left wishing you could swaddle your offspring in bubble wrap before they go out to play. Since that's not an option (really, it's not!), we asked top doctors to put the facts in perspective. Here's what you need to know about head injuries so you can feel good about cheering your kids on, whether they're running onto the field or hanging off the monkey bars.



## Grade-schoolers are especially vulnerable

Not only does their rough-and-tumble behavior on the playground put them at risk, but younger kids have physical differences that make them particularly susceptible to head injury. “For one thing, their necks are weaker, which makes their heads wobblier. They also can’t brace as well for a hit, so their brains receive more of a jolt,” explains Robert Cantu, M.D., clinical professor of neurology at Boston University and author of *Concussions and Our Kids*.

Another factor: Children don’t have as much protective fatty coating, or myelin, around the nerve fibers in their brains as do grown-ups, so the tissues are more easily affected by impact.

## Injury can occur in big and small ways

When someone gets hit in the head, the brain shakes against the skull. A concussion doesn’t cause bruising or bleeding (those are more serious issues); instead the injury triggers a cascade of chemical reactions that affect brain functioning, explains Kevin Walter, M.D., program director of pediatric and adolescent sports medicine at the Children’s Hospital of Wisconsin.

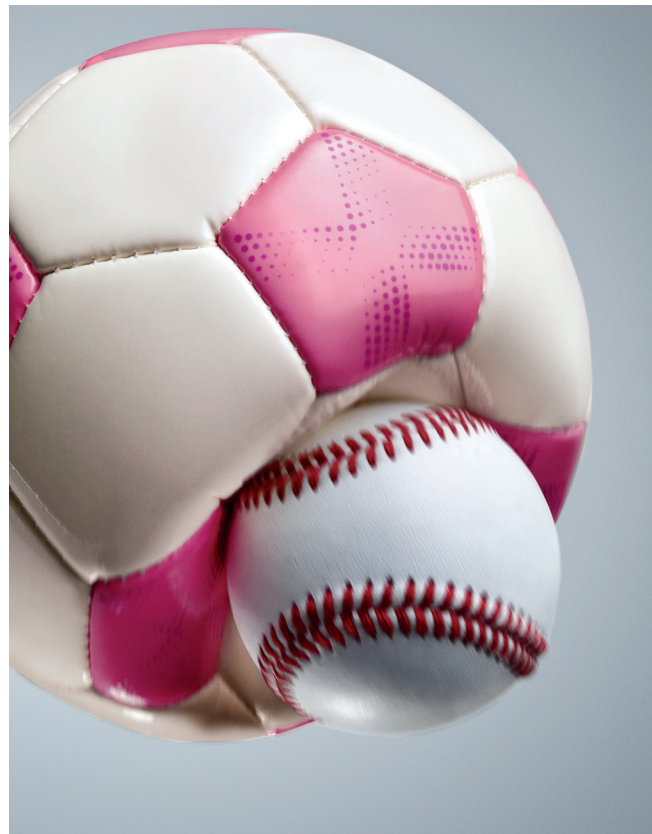
Typically, we think a concussion occurs after one major blow (like a fall off

a bike). But newer research suggests that harm can also be caused by a series of milder bumps over time, like heading the ball in soccer or getting tackled routinely in football. At least that’s what researchers from Purdue University speculated after studying changes in the brains of high-school football players. When the scientists used an MRI test to examine the brains of players who had no history of concussion symptoms, they saw changes in the way the players processed information—and the patterns were similar to those of teammates who had been diagnosed with a concussion.

## The effects build up

The Purdue study also found that teens who got hit in the head around 50 times a week (surprisingly, most of them) had a fifty-fifty chance of reversing brain changes during the off-season. Those chances dropped to 6 percent, however, if players were hit more than 60 times a week. Why the decline? Researchers speculate the brain doesn’t have time to recuperate after all those blows.

Since the harm seems to be cumulative, experts think that the earlier kids start accruing head blows, the more likely the damage could be lasting. This is especially true if a child has been formally diagnosed with a concussion. Although the issue has barely been studied in the 10-and-younger set, the research on professional



## Caring for a kid with a concussion

A general plan for children with minor to moderate head blows

**STAGE 1:** No school, no homework, no reading, and no screens (not even cell phones)—too much visual stimulation slows down healing. “Kids can interact with family, listen to stories, or draw, as long as it doesn’t make them feel worse,” says Kevin Walter, M.D. For most kids, this stage lasts a couple of days.

**STAGE 2:** With the doctor’s okay, encourage your child to try to do a little homework or reading. If she has symptoms, have her take a break. You’ll also need the doc’s permission before she can play on a device or watch TV.

**STAGE 3:** Once your child is able to do homework or read, she can return to school. Take it slow! She may need to take breaks—or even come home—if her symptoms return.

**STAGE 4:** Within three weeks most kids are back to normal. Just don’t let makeup work overwhelm your kid.

athletes has revealed a correlation between the number of concussions and slightly lower scores on cognitive tests.

No need to panic, though: “A child would need to have multiple concussions, not to mention serious ones that weren’t recognized or given time to heal properly, in order to affect her IQ,” says Dr. Walter.

## You can’t cheat your kid’s recovery time

Doctors can’t stress this enough: If kids don’t take enough time off to rest after a head injury, they are more likely to develop post-concussion syndrome, in which symptoms last for weeks, as Callie’s did—or even months. (See “Caring for a Kid With a Concussion” for guidelines.) How long a child needs to heal varies, but in 80 percent of cases, symptoms resolve in about 10 days. In the remaining 20 percent

of cases, symptoms linger longer. It's not clear why healing stalls, but rejoining the team too soon can be a contributing factor, says Dr. Cantu. (For the CDC's take on when kids can go back on the field again, visit [Headsupparents.org](http://Headsupparents.org); scroll down and click on "Returning to Sports.")

### There's no "right" choice

Like thousands of other parents, Sandra Carreon-John faced the dilemma of letting a kid continue to play after her 10-year-old, Christopher, suffered a concussion during a hockey game last year. Despite knowing all the risks, she realized she couldn't tell him his days on the ice were over. "The injuries he's had pale in comparison to the self-esteem, exercise, and friendships he gets," says the Glen Rock, NJ, mom. "But I'm worried about it happening again."

To try to prevent that, Carreon-John had Christopher watch a video about avoiding concussions and wants him to use the Reebok Checklight (\$150), a skullcap that can be worn under a helmet to measure the severity of impact. "Other parents might make a different choice, but for now I'm letting him play."

Turns out that Carreon-John isn't alone, even among parents whose kids play football. While tackle football has seen a 13 percent decline in kids' participation, in a survey on concussions by HBO and

### symptoms to watch for

**Diagnosing a concussion is usually based on symptoms, not tests. If your child is conked in the head, a doctor needs to evaluate her within 48 hours\*—even if she seems fine, says Tracy Zaslow, M.D., of Children's Hospital Los Angeles. Keep an eye out for the following signs:**

- Headaches
- Confusion, especially immediately after the blow
- Blank, dazed look
- Dizziness
- Blurred vision
- Sensitivity to light and noise
- Nausea and vomiting
- Difficulty concentrating and remembering
- Sleepiness
- Impaired balance
- Slowed reaction times
- Trouble controlling emotions—crying for no reason, irritability, laughing more than usual

\*If your kid blacked out for more than 30 seconds, has severe or worsening headaches, has different-sized pupils, has seizures, or vomits more than twice, take her to the ER immediately to rule out a more serious brain injury.

Marist College, 70 percent of moms and dads said they thought the benefits of the sport outweighed the risks.

The silver lining in all of this is that sports associations are taking steps to protect their young players. For example, Pop Warner football, a nonprofit program for kids 5 to 16, has nixed full-speed head-on blocking and tackling drills in practice. USA Hockey has banned checking for kids younger than 13, and many youth soccer teams limit heading during practice for older kids and no longer allow the youngest kids to head the ball—period. That's a smart move, since studies show that 30 percent of concussions in soccer are caused by heading the ball or colliding with another player.

The bottom line from doctors: Parents shouldn't keep their kids away from a sport, but they do need to understand what their kid is getting into. And if your child has had several concussions, it's especially important to weigh all the factors—how long it took to recover, any persistent symptoms, and whether the injuries occurred during a single season—and decide with a specialist about whether he should continue playing, says Dr. Giza.

"Our knowledge on how to keep kids safe is evolving, but it makes sense to monitor your kid's activity," he adds. "Make sure he knows he should tell you if he falls or is hit in the head, even if he thinks he's okay. It's not an exact science, but it's the best we have now." ■

