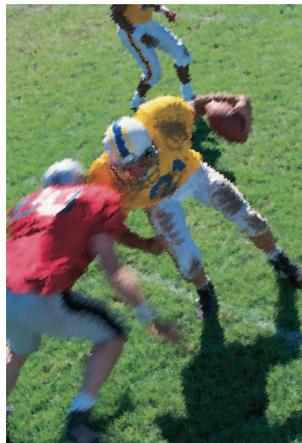


The fans were hopped up on adrenaline, emotion and noise. Then it happened — football coach Craig Sponsky's star quarterback hit the ground headfirst. He had not been hit hard, but he got up slowly. He yelled to Sponsky that he was okay. But Sponsky knew something was wrong. "Looking at him, you could tell something was different," Sponsky recalls. "He just looked different. It was almost like he was trying to hide something."

Sponsky took him out of the game. After halftime, the quarterback pressed Sponsky and the medical staff to let him play. "The dilemma is, you see 52 other kids who want to win so badly," Sponsky says. "You've worked so hard to get to that competition. Then you have all the fans yelling. It seemed to me like there was so much weight on my shoulders, and so many differing opinions. It was awful."

Finally the doctors relented. The quarterback begged Sponsky to let him return. Sponsky refused. And then another player scored a touchdown, securing Bishop Carroll's victory. The quarterback sat out the remainder of the game. After the game, they learned that he had suffered a mild concussion.



***'Even what we call a 'ding' causes changes in the brain. Kids really need a couple of days to recover.'***

### **Fall Brings Football — and "Seeing Stars"**

Fall is football season, and along with football's thrills and pageantry come injuries. Among them, thousands of young players will experience the brain-jarring injury that took Craig Sponsky's quarterback out of that playoff game three years ago.

## **Steroids Not Good for Severe Brain Injuries**

**By Frank Clancy**

**I**n medical research, negative results don't often make headlines. But as one recent study, nicknamed CRASH (for Corticosteroid Randomization After Significant Head Injury), demonstrates a negative result — knowing what does *not* work — can literally save lives.

Physicians have used corticosteroids to treat patients with severe head injuries for more than 30 years to try to reduce swelling and reduce both brain damage and death. Previous attempts to measure their effectiveness, however, were inconclusive. Partly as a result, the use of steroids in treating brain-injured patients had dwindled. But it had not stopped.

The CRASH trial was by far the largest of its kind, with 20,000 patients in 239 hospitals in 49 countries participating. The participants included two hospitals in Albania, 13 in Argentina, four in Egypt, seven in Thailand, one in Kenya, another in Ivory Coast and 45 in the United Kingdom, where the trial was coordinated.

(There were no patients in the U.S.)

All patients had suffered a severe brain injury within eight hours of being treated. Half were randomly assigned to receive an infusion of methylprednisolone, a corticosteroid, for 48 hours. The other half received a placebo, or inactive substance. The study was "blinded," meaning that the physicians did not know which patients received the drug. The trial was designed to measure the effect of corticosteroids on both death and disability.

### **Surprising Results**

The study yielded surprising results. The organizers originally thought corticosteroids would reduce the risk of death by 15 percent. In fact, the opposite occurred: Individuals treated with steroids were 18 percent more likely to die within 14 days of their injury. As a result, the trial was halted halfway.

The first results were published last October in the journal *The Lancet*. Of 5,007

patients who received methylprednisolone, 1,052 (21 percent) died within 14 days of being injured. In contrast, 893 (17.9 percent) of 5,001 patients who were given a placebo died.

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***'This trial puts another nail into the coffin of corticosteroids in the management of acute brain injury.'***

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"In a metaphorical way, this trial puts another nail into the coffin of corticosteroids in the management of acute brain injury," says Mark P. Cilo, M.D., a neurologist who founded the Brain Injury Treatment Program at Craig Hospital in Englewood, Colo., and an assistant clinical professor in

## Preventing Concussion

- ❑ Kids should wear a helmet, not just in high-contact sports like football or hockey, but also when bicycling, rollerblading and skiing.
- ❑ Young athletes should learn proper techniques. Football players, for example, should learn not to use their heads to block and tackle. Soccer players should learn to head the ball with the forehead.
- ❑ Teach young people to walk away from a fight. Fighting can be more dangerous than most people realize. Last spring, for example, it made newspaper headlines when a teenager in St. Paul, Minn., died after a single punch – he fell and hit his head on a curb.

Indeed, the language of football hints both at how ubiquitous concussions are and how lightly they're sometimes taken — players speak of “dings,” of “having your bell rung,” of “seeing stars.”

An estimated 62,816 cases of mild

traumatic brain injury, such as concussions, occur annually among high school varsity athletes, with football accounting for about 63 percent of the cases, according to a study reported in 1999 in the *Journal of the American Medical Association*. But

the Physical Medicine and Rehabilitation department at the University of Colorado Health Sciences Center in Denver.

“I was surprised by the data,” says Barry Jordan, M.D., a neurologist who directs the Brain Injury Program at Burke Rehabilitation Hospital in White Plains, N.Y. “I would have expected not to see a benefit. I was surprised to see that methylprednisolone increased mortality.”

Dr. Jordan, too, calls it an “important” study. “It confirms what people have been advocating recently, that there is no role for steroids in the treatment of traumatic brain injury,” he adds.

### Questions Still Remain

Still, some questions remain unanswered. Researchers don't know, for example, why or how steroids increase the risk of death; the study was not designed to find out, and researchers ruled out obvious causes, such as infection and internal bleeding.

Most importantly, from Dr. Cilo's perspective, researchers have not yet published data examining the effects of corticosteroids, if any, on patients' disabilities six months after injury. It's still possible, he says, that methylprednisolone might

increase the risk of death but decrease the extent of disability among those who survive severe brain injuries, where the potential for severe disability is high.

If that were to prove true, physicians and families might be faced with a trade-off — a higher risk of death, compared to an improved chance of suffering less severe disabilities. Small differences in permanent damage to the brain could have a big effect on a patient's quality of life when the brain injury is severe, Dr. Cilo adds. “The jury's still out.”

For now, though, as the authors of the *Lancet* paper write, “corticosteroids should not be used routinely to treat head injury, whatever the severity.”

This finding may well save lives. Every year, about 280,000 people are admitted to U.S. hospitals with severe brain injuries, according to statistics from the Centers for Disease Control and Prevention. Some 50,000 of them die. Around the world, an estimated three million people die each year from brain trauma.

“At least we know what not to do,” Dr. Jordan says. “That's the importance of this study. You don't want to put a patient on a medication that may be harmful.”

football players are not alone. Wrestlers, soccer players, basketball players and other athletes will suffer a similar fate, albeit in smaller numbers. Children will have concussions on playgrounds or when falling off a bicycle. For parents and coaches alike, knowing how to handle a young person who has had a concussion, both on the field and at home, is crucial.

The American Academy of Neurology (AAN) defines concussion as “a trauma-induced alteration in mental status that may or may not involve loss of consciousness.” Most cases are minor; noticeable symptoms last no more than 15 minutes, according to the AAN's Practice Guidelines for the treatment of concussion.

But minor does not mean harmless. Research increasingly demonstrates that even minor concussions alter brain function for days, usually impairing memory, reaction time, concentration and other neurological functions.

“There is still a perception that if you didn't lose consciousness you didn't have a concussion. That's wrong,” says Deborah L. Warden, M.D., a neurologist and psychiatrist who is director of the Defense and Veterans Brain Injury Center at Walter Reed Army Medical Center in Washington, D.C. Even an injury that causes a bit of fuzzy thinking is a mild traumatic brain injury.

“Even what we call a ‘ding,’” she adds, “causes changes in the brain. Kids really need a couple of days to recover.”

### Recognizing Concussion

Common signs of concussion include a vacant stare, delayed responses to questions, disorientation, slurred speech, lack of coordination and poor short-term memory. Any loss of