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More Concussions Treated in Basketball Players

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September 13, 2010

MedPage Today Action Points

- Explain to interested patients that although overall injury rates decreased from 1997 to 2007, the number of emergency department visits for traumatic brain injury due to basketball increased in children and adolescents.
- Note that basketball injuries were more common in boys -- who predominantly sustained fractures, cuts, and dislocations -- while girls were more likely to have traumatic brain and knee injuries; traumatic brain injury was also more common in younger children.

Review

Although basketball-related injuries treated in the emergency department have decreased among children and teens in recent years, the number of traumatic brain injuries (TBIs) has increased, researchers found.

From 1997 to 2007, overall injuries dropped by 21%, whereas the number of TBIs grew by 70% ($P \leq 0.002$ for both), Lara McKenzie, PhD, of Nationwide Children's Hospital in Columbus, Ohio, and colleagues reported online ahead of the October issue of *Pediatrics*.

For the entire study period, the proportion of basketball injuries that were TBIs was 2.6%, but that figure nearly doubled among boys and tripled among girls over time.

"To address the problem of traumatic brain injuries and manage them effectively, education of coaches, athletes, and parents is vital," McKenzie said in an interview. "The prevention of traumatic brain injuries may be challenging, and individualized prevention efforts should probably be targeted toward players with a history of concussion."

For younger children specifically, the use of age-appropriate basketballs may decrease rates of concussion, as well as finger-related injuries, McKenzie noted, adding that rough play should be discouraged.

Despite the injury risk, though, children should be encouraged to play sports, she said.

"I wouldn't say to take your child out of a sport -- particularly one that they like a lot -- because there's a lot of good benefits that really outweigh some of these negative

injury risks."

McKenzie and her colleagues performed a retrospective analysis of data from the National Electronic Injury Surveillance System of the U.S. Consumer Product Safety Commission for children and teens ages 5 to 19.

Over the 11-year study period, an estimated 4,128,853 basketball-related injuries were treated in emergency departments, an average of 375,350 per year. Boys comprised about three-quarters of the cases.

The total number of injuries declined from 404,313 in 1997 to 316,081 in 2007.

The total number of TBIs increased over time, as did the rate of TBIs -- from 11.9 per 1,000 population in 1997 to 19.4 in 2007 ($P < 0.001$).

The researchers noted, however, that the actual number of TBIs may be higher than the estimates.

"In a review on sports-related concussions, more than one-third of athletes did not recognize concussion symptoms or report these symptoms to trainers; 28% continued to play after a blow to the head that caused dizziness," they wrote.

McKenzie said that the rise in TBIs could reflect increasing awareness of the signs and symptoms of concussion, an increase in the size and strength of players, greater levels of competitiveness and intensity of training and play, or a younger age when starting to play.

Some of the other findings from the study:

- Injuries requiring hospitalization were rare -- just 0.8% of the total. Boys were more likely than girls to be admitted.
- The most common injury was a strain or sprain in the lower extremities (30.3%), mostly affecting the ankle (23.8%).
- Boys were more likely than girls to sustain cuts and fractures or dislocations.
- Girls were more likely than boys to sustain TBIs and knee injuries.
- Teens ages 15 to 19 were more than three times as likely as younger children to injure their lower extremities.
- Younger children ages 5 to 10 were more likely than older children to injure their upper extremities and sustain TBIs, fractures, or dislocations.
- Most injuries occurred at a sports or recreational facility (36.1%) or school (26%).

The study was limited by including only those injuries that required treatment in the emergency department, the authors wrote.

Additional limitations included the lack of information on fatalities and the lack of risk assessments because participation data are difficult to ascertain for basketball, they wrote.

One of the study authors received stipend support from the Dorothy M. Bennett and Clark L. Bennett Medical Research Scholarship.

The authors reported that they had no conflicts of interest.

Primary source: Pediatrics

Source reference:

Randazzo C, et al "Basketball-related injuries in school-aged children and adolescents in 1997-2007" *Pediatrics* 2010; 126: 727-733.

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