

[Editorial]

Sports Injury Prevention

Sports participation during childhood, adolescence, and the teenage years is the focus of much attention by a variety of pediatric stakeholders. The physical, mental, and emotional development associated with athletic endeavors can play a great dividend in adulthood. Whether it is a team sport demanding the combined effort of various personalities and skills sets or the mental toughness required of individual competition, character development often benefits.

Unfortunately, on the flipside of many athletic endeavors is the risk of injury, which can bring long-term consequences. Therefore, balancing the benefits and risks is often the best course to making reasonable decisions about athletic participation.

This past football bowl season brought the topic of sports injury risk to the forefront when Louisiana State University's Leonard Fournette and Stanford's Christian McCaffrey bypassed their school's bowl games in deference to their professional football careers. The news surprised many and sent a shock wave through college football. While some players may not have participated in bowl games in the past for fear of injury, none that I can recall were as forthright in walking away from these contests citing the risk to their professional careers.

Some have speculated that this development is the result of the National Collegiate Athletic Association (NCAA) football playoff arrangement now in place where the top 4 teams, picked by a committee, determine the route to the national championship, in effect diminishing the attraction of and attention to those bowl games not involved with the playoffs. Apparently, McCaffrey and Fournette felt that they had more to lose in their bowl games than gain. They certainly did not need further exposure; their talents are well known.

Drawing further attention to this dilemma was the University of Michigan's Jake Butt, an All-American tight end and John Mackey Award winner in 2016 as the nation's best tight end. Butt left the Orange Bowl with a torn anterior cruciate ligament (ACL) in his final game as a Wolverine. He later stated that he had no regrets and never considered not playing in the Orange Bowl. It will be interesting to see which route elite players choose in the future with the expected expansion of the football playoff system and the diminishing lure of other bowl games: Will these athletes compete or choose to sit, protecting their National Football League (NFL) chances?

With these risks of injury in college football in mind, it's worth taking a look at some injury statistics at the collegiate and professional level. Of 332 elite college football players participating in the NFL Combine in 2005, 54% had a history of knee injury (233 injuries total; 1.3 injuries per player).² Eighty-six players (25.9%) had a total of 114 surgeries, including 35 ACL reconstructions. While injuries were most common in defensive lineman (68%), tight ends (57%), and offensive linemen (57%), knee surgery was most common in running backs (36%) and linebackers (34%).²

Looking specifically at ACL injury—one of the more devastating injuries for athletes—an online review suggests that those athletes with an ACL tear who make it to the NFL have shorter careers than their uninjured teammates. Furthermore, their cumulative salaries over 4 years took a significant hit.⁷

So, some of you might ask what bearing these knee injury data from collegiate and professional sports have on those of us who no longer participate in competitive sports for any number of reasons. Hopefully it will remind all of us, including our athletic trainers, physical therapists, physicians, moms, dads, coaches, and alike, of the importance of injury prevention. Most important, injury prevention efforts should begin long before athletes reach the elite level of competition. In my mind, these prophylactic efforts are inseparable from supporting healthy pediatric growth and development. Obviously, the goal of most of our efforts isn't developing professional athletes but rather encouraging youngsters to stay athletically active throughout their lifespan by establishing and maintaining healthy exercise habits. The benefits of sports participation are well documented. What does deserve emphasis is the negative impacts that sports injuries can have on a healthy lifestyle, justifying our efforts in preventing these injuries with appropriate training and conditioning along with adequate protective equipment, especially in rigorous contact sports.

Enlightening the path to developing safer sports participation programs and healthy athletic development are 5 articles in this issue of *Sports Health*. To start, it's important to emphasize that physically active children often experience "growing pains," which can pose a dilemma for many parents. The review by Lehman and Carl⁷ specifically targets the question of when parents should be concerned. The review focuses on the presenting symptoms, limb symmetry, and physical findings that indicate when a medical workup may be indicated.

As children grow and mature, the risk profiles of a variety of activity levels are helpful in determining when and where interventions are most helpful. The review by Costa e Silva et al³ interestingly pinpoints the children who do not participate in sports as having the greatest risk of injury. Also in agreement with many recent injury reports is the finding that early-maturing girls just past their peak height velocity may be particularly vulnerable to sports injury due to the growing process.

Sports participation exposes kids not only to acute trauma but also to overuse injury. Acute traumatic injuries usually receive the most attention and are the focus of most injury prevention programs, yet the physis of growing bones in youth is particularly vulnerable to overuse injury. The publication by Arnold et al¹ identifies the risks and maps out prevention and treatment strategies for training and conditioning programs. Most important, it identifies when “active rest” may be the only successful treatment.

Maybe one of the strongest arguments for regular exercise at any age is the maintenance of bone health. The review by Goolsby and Boniquit⁴ shows clear evidence regarding the benefits of exercise to bone health at every age—a critical factor in osteoporosis prevention and treatment. The negative impact of an imbalance of exercise and nutrition, especially in the female athlete, justifies particular emphasis.

No doubt the surveillance of exercise routines, attention to symptoms, physical signs, and nutritional guidance are essential to the development of healthy athletic profiles, but for those participating in many rigorous contact sports, protective equipment can play an integral part in injury prevention.

Frequently overlooked in this armamentarium is footwear, often viewed as a cosmetic feature. The review by Jastifer et al⁵ exposes how wrong that viewpoint really is, demonstrating how factors that can influence injury rate have been overlooked.

In reading these articles, you'll see that excellent progress is being made in sports injury prevention, especially with regard to our understanding of how these injuries occur and the best ways to keep children safe while enjoying sports. While some injuries are unavoidable, many can be prevented. It's time to see how many we can cross off the list!

—Edward M. Wojtys, MD
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