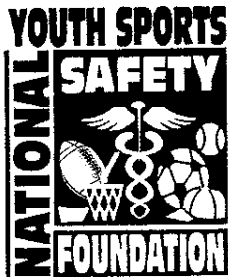


# SURF LINES

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## Safety in Youth Sports

The Role of Standards, Personal Protective Equipment & Common Sense

P. David Halstead

Organized youth sports in the United States are relatively safe endeavors where the benefits far outweigh the risks. On the individual level, even less organized sports have enormous physical and emotional benefits that in all but the most extreme cases weigh in favor of the activity. That is not to say that life altering catastrophic events never occur. Although rare and unfortunate these terrible tragedies can and do happen. It is the role of protective sports equipment, those who build this equipment and the governing bodies that create the methods to judge their potential effectiveness, to be the final defense in minimizing the occurrence of such events. Even in the best of circumstances there are times when nothing can prevent heartbreaking injuries, and even deaths, from occurring.

### The Standards Setting Process

Standards in North America usually can be described as falling into one of two gross categories: Government standards, such as those mandated by the Consumer Product Safety Commission, and voluntary or industry standards. Of the voluntary standards, the ones that are mandated by a particular governing body seem to be the most effective. For example: if a piece of personal protective equipment is required for some type of play, (like a certified helmet is required by USA Hockey) then it is a good bet players will wear such equipment because they cannot participate without doing so. Governing bodies, however, rarely write such standards because that is not in their area of expertise. Rather, they will rely upon other organizations like the American Society for Testing and Materials (ASTM) to arrive at a viable and effective standard. ASTM is a premier standard setting organization with more than 30,000 members that is well respected for its consensus standards.

Other organizations, such as the National

Operating Committee on Standards for Athletic Equipment (NOCSAE), operate using a smaller format. This more limited group is capable of setting standards much more quickly than the consensus approach. It could be argued that this second approach involves less input from concerned parties, but a "public" review period prior to actual implementation eliminates most of this criticism. On the plus side, these smaller groups can sometimes act in the best interest of the athlete with less political maneuvering from outside interests that may fear the effects of any change in a standard. In short, both approaches can and do work very well.

Some of the most effective systems use yet another layer to implement the standards. The Hockey Equipment Certification Council (HECC) is one such example. This group does not set standards but instead will adopt for use the standards set by, for example, ASTM. HECC then will oversee the certification process that must be successfully completed in order to earn the mark of the Council. In these cases the governing bodies will require that the product be marked as such by HECC before they can be used for competitive play. In the above example, USA Hockey (the national governing body) requires that helmets and face protectors be certified by HECC in order for them to be worn for ice hockey in a league under the oversight and/or control of USA Hockey. (continued on page 2)

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# DID YOU KNOW

**In 1997 sports injuries to youth age 0-14 in 29 sports ( archery, baseball, basketball, bicycles, boxing, diving, football, golf, gymnastics, hockey, field hockey, ice hockey, street hockey, horseback riding, martial arts, skating, ice skating, inline skating, roller skating, skiing, soccer, softball, swimming, tennis, track & field, trampolines, volleyball, weight lifting, wrestling) cost the U.S. public \$49,192,781,832**

*Source: U.S. Consumer Product Safety Commission*

## Safety in Youth Sports *from page 1*

The act of setting standards is complex and can be difficult. The process involves the cooperation of many, but is rewarding when a standard that may save a life is implemented.

One common pitfall of these efforts is that the game can sometimes get lost in the desire to protect the participants. The process involves a good deal of give and take by many parties, but the goal--the protection of the athlete--is foremost in everyone's mind.

### Protective Equipment

Protective equipment can range from a simple batting glove to a sophisticated head protection system. Typically, standards are only prepared for those items that can effect the incidence or magnitude of a serious injury. For example, there are no standards on athletic supporters (jock straps), shin guards or shoulder pads. Some actions for these products are underway in a variety of organizations, but the perceived need is less than some other areas like head protection. It is important to note though that these non-standardized devices can and do work well. There are also standards on a wide variety of non-protective sports related products, like footwear, baseballs, bicycles, etc. These standards are sometimes for performance characteristics; sometimes just to be sure if a term, or claim is made that the language is uniform throughout the industry to avoid consumer confusion. In many cases even though protection is not the product function, proper standards and supplier adherence to them may reduce the risk of injury. One example is the reflector requirements on bikes.

In most cases, personal protective equipment grew out of a need, and in many cases the process was simple. If you got hurt you put some padding on the spot to hopefully prevent further injury. If that did not work you might add a hard shell over the padding, and you had a simple helmet or shoulder pad. In many cases that is all that was needed. That may be one reason for the lack of effort to create standards on some protective products.

If the injury risk is small, if the products available work, if consumers are not confused by product promotional claims, and litigation is low, there will be little incentive to create a standard. But in some areas of protective equipment development, a deep understanding of the biomechanics of the injury is called for. Head injury is a good example. There are at least two major causes of closed head injuries suffered by athletes. One is linear acceleration. As the name implies this is acceleration, or stopping, deceleration if you will, along a line. The proverbial sudden stop when your head hits the ground at the end of a fall is perhaps the simplest example.

Another type of closed head injury mechanism is rotational or angular acceleration. Perhaps the best example of this may be what has come to be called "shaken baby syndrome." As the name implies, the action can be a shaking, or rapid rotation; either side to side as in saying no, or up and down as in nodding yes; or nearly any combination of the two. Of course the levels to cause injury are higher than these typical gestures and are so far not well understood. That is to say, threshold injury values for linear acceleration are estimated with some degree of scientific certainty, but rotational injury is less well documented relative to onset thresholds.

In the many serious head injuries it is the author's opinion that it is likely for both mechanisms to be present. From the protective equipment standpoint this is a potential quandary. In the rotational mode of injury a helmet may be of little or no value. In fact, having the added mass of a helmet on your head may be a bad thing depending on a variety of factors. But say, in the case of football, not having the helmet represents such a known and obvious risk that you must wear one.

### Common Sense

There is no substitute for common sense. It is the most important tool against sport related injury. The examples are everywhere. There is no substitute for good (continued on page 4)

## RESOURCES

**Fit, Healthy, and Ready to Learn: A School Health Policy Guide**, published by the National Association of State Boards of Education (NASBE) contains information on HIV and school athletics, safety requirements, nutrition, physical education and more. Copies are \$22 plus \$4 shipping and handling and are available from NASBE, 277 South Washington Street, Suite 100, Alexandria VA 22314, 800-220-5183.

**U.S. Diving Safety Training Manual, Second Edition**, Janet L. Gabriel, Senior Editor, features safety training for competitive diving coaches, risk management, injury control, emergency response and care of competitive diving injuries. Available from U.S. Diving, Inc., Pan American Plaza, 201 S. Capitol Avenue, Suite 430, Indianapolis, IN 46225.

**Sports Injuries Sourcebook**, edited Heather Aldred, provides basic consumer health information about the causes, treatment, rehabilitation and prevention of common injuries in many different sporting activities and populations including youth. Published by Omnigraphics, 615 Griswold Detroit, MI 48226, 313-961-1340. \$78.

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## Safety in Youth Sports (from page 2)

coaching and learning the fundamentals of the game no matter what the sport is. And the days of playing hurt are, or at least should be, gone. The knowledge of the effects caused by repetitive injury are well documented. I am always amazed when I get a call like the following: "My son has had several concussions playing football. What kind of helmet should I get him?" My answer, "A good golf hat to go with the clubs so he can stop playing football." The risk of re-injury, with permanent and potential catastrophic effects, is very high in the player who has experienced this quantity of injuries.

In conclusion we must remember that common sense, good coaching, good officiating,

some old-fashioned fitness habits (including good hydration), and skill in the fundamentals are the best injury prevention tools we have. I'd like to point out that, in my opinion, the best piece of protective equipment a baseball fielder has is his/her glove and knowing how to use it. Similar examples exist in nearly every sport. It must be remembered though, that even with the best coaching, top-notch equipment and best effort on the part of all, injuries can and will occur.

*P. David Halstead is technical director of the University of Tennessee Sports Biomechanics Impact Research Lab, College of Engineering, Department Industrial Engineering, Engineering Institute for Injury and Trauma Prevention, Knoxville, TN.*



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