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US Youth Soccer Concussion Policy:

Heading in the Right Direction

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On November 9, 2015, the US Soccer Federation, US Youth Soccer Association, American Youth Soccer Organization, US Club Soccer, and California's Youth Soccer Associations (collectively referred to hereafter as *US Soccer*) issued a joint statement¹ announcing the soon-to-be-released comprehensive campaign for safety in youth soccer, a sport that has grown dramatically in the past 4 decades. The sweeping initiative comes on the heels of a 2014 lawsuit, eliminating heading soccer balls for youth players younger than 10 years and limiting the practice of heading for children ages 11 to 13 years.¹

The 2015 US Soccer announcement included initiatives aimed at improving concussion awareness and uniformity in concussion management protocols among US Soccer constituents nationwide.¹ One additional forthcoming rule change will allow a possibly concussed athlete to be removed from play without penalty to the team's substitution quota.¹ US Soccer hopes that this will encourage appropriate medical evaluation of potentially injured athletes. Similarly, substituting a medically cleared player back into the game will not cost the team a substitution under the new initiatives.¹

The amended bylaws will be mandatory for US Soccer youth national teams and academies, but the rules will be only recommendations for other associations and development programs that are not under US Soccer control.¹

Catalyst for Change

The new initiative resolved a legal case that began in August 2014, when a group of parents and players filed a class-action lawsuit in a California District Court, alleging that the

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Fédération Internationale de Football Association, US Soccer, and the American Youth Soccer Organization were negligent in treating and monitoring youth head injuries.¹ Stemming from the head injuries, the suit sought nonmonetary damages. Instead, the plaintiffs desired rule changes, citing nearly 50 000 high school soccer players who sustained concussions in 2010, more athletes than in baseball, basketball, softball, and wrestling combined.¹

The lawsuit manifests a broader societal concern regarding brain trauma sustained through sport. It has been estimated that 1.6 million to 3.8 million concussions occur annually in the United States from sports and recreational activities.² More than 44 million individuals younger than 18 years participate in organized sport in the United States, and for individuals aged 5 to 18 years, 65% of emergency department visits are caused by sports- and recreation-related brain injury.³ Further, the developing brain may be more vulnerable to the effects of mild traumatic brain injury.³ Concussion from sport can lead to acute, prolonged, and potentially chronic neurological consequences.³ The combination of injury prevalence and potential consequences has led to concussion being increasingly considered a public health priority.

In soccer specifically, repetitive hits to the head have been associated with neurophysiologic changes to the brain. For example, a study of female high school soccer players found significant changes in cerebrovascular reactivity across the course of the competitive season compared with a noncollision sport control group.⁴ Thus, reducing overall head impact exposure, rather than just focusing on concussive impacts, may be an important policy goal.

Changes in Other Sports and State Legislations

Changes aimed at preventing concussive injuries have already occurred in other sports. For example, Pop Warner Football⁵ initiated new rule changes in 2012 that limit body contact practicing to only a third of practice sessions, or a maximum of 40 minutes, and “prohibits full speed head-on blocking or tackling drills where players line up more than three yards away from each other.” USA Hockey banned body checking in boys’ hockey until the bantam level, when players are aged 13 to 14 years, there by eliminating body checking at the peewee, squirt, and mite levels, which cover participants up to 12 years.⁵ USA Hockey had already banned body checking in girls’ hockey.⁵

These league rules supplement state youth concussion legislation adopted in all states between 2009 and 2014.⁵ Most states’ laws include 3 main tenets: (1) education for coaches, parents, and athletes; (2) removal of athletes believed to have had a concussion; and (3) requiring permission by a medical professional before returning to play.⁵ Notably, state-level legislation incorporates secondary and tertiary injury prevention efforts to reduce the health burden of concussions.⁵ However, they do not include primary prevention strategies, ie, ways to prevent concussions from occurring in the first place.

Areas for Improvement

The US Soccer initiative is in line with many other concussion policies already in place in that it aims to reduce concussion by reducing or eliminating a high-risk activity within the

sport. The new rules attempt to not only eliminate the impact from the fast-moving ball, but reduce unintentional head impacts that may occur while attempting a header.

Although heading is the activity most frequently associated with concussion in soccer, research shows that athlete-to-athlete contact is most frequently the mechanism of injury.⁶ Thus, some assert that eliminating heading is not the appropriate solution and that proper instructions on the correct way to head the ball coupled with improved enforcement of existing rules governing athlete-to-athlete contact will more effectively reduce injury.⁶ We agree that additionally limiting rough play and enforcing rules already in place to prevent such play may strengthen US Soccer's new initiatives. However, whether eliminating headers decreases concussion rates and, perhaps equally importantly, reduces head impacts overall is ultimately an empirical question that should be evaluated. The new initiatives do not require injury reporting or provide any mechanism through which policy effectiveness analysis could be conducted. States and sports leagues that have put forth public health policies, including concussion policy, have a moral duty to ensure their efficacy. US Soccer could be the first youth sports league to explicitly incorporate mandated injury reporting into its concussion prevention and management strategies.

Evaluation

Although a number of rules have been put in place to reduce concussions, fewer leagues have taken appropriate steps to evaluate the effects of these policies. For example, moving the football kickoff forward, a policy aimed at reducing the high speed impacts that occur on kickoff return, has not been evaluated for its effectiveness in reducing concussion.⁷ However, where evaluation has occurred, primary prevention interventions have often been found effective. For instance, overall injury rates and rates of concussion were significantly lower in peewee ice hockey leagues where body checking was disallowed.⁸ Although policy effectiveness examinations are analytically challenging, they are critically important. In the context of soccer concussion policies, the most pressing issue is ensuring that when heading is disallowed, alternative mechanisms for playing the ball do not result in an increase in injury.

Conclusions

As the United States confronts an epidemic of pediatric obesity, it is important to foster an environment where children can play sports vigorously yet safely. Rule changes instituted by various sports leagues illustrate how medical research and advocacy for greater concussion awareness can lead to policy changes aimed at improving sport safety while maintaining the health benefits of participation in organized sport. However, implementing policy should be consistently followed by an empirical evaluation of policy effectiveness. US Soccer's initiative is a step in the right direction that will affect millions of young soccer players nationwide and its decision for further safety-based rule changes warrants public attention and action. As US Soccer provides more details regarding the scope of its initiatives, it should consider incorporating mechanisms to require injury reporting, reduce athlete-to-athlete collision, and prioritize empirical evaluation of its policy's effectiveness.

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