

Scoring a Goal [for Prevention]

PHYSICAL ACTIVITY REPRESENTS A KEY STRATEGY for stemming the epidemics of obesity and type 2 diabetes mellitus. Team sports are a particularly good way to promote activity and its health benefits because teams create an environment that is fun and sociable. Furthermore, the skills that a player learns through team sports may result in a lifetime devotion to the sport. Students who participate in school sports are more likely to stay in school and to maintain an active lifestyle as they get older. Among teenagers, team sports may provide benefits beyond physical activity by fostering discipline, providing a sense of belonging, and promoting a positive body image,¹ which may be especially important among teenage girls.²

Unfortunately, competitive sports can also produce injuries. In the United States, an estimated 1.4 million injuries occur annually as a result of participation in high school sports alone.³ Injuries are not only painful, they are also costly⁴; moreover, injuries may prevent athletes from continuing to be active⁵ and may cause long-term sequelae, including osteoarthritis.⁶⁻⁸ Preventing injuries during participation in team sports should therefore be a health priority.

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Preventing sports team injuries (as with preventing diseases) requires a detailed understanding of the underlying conditions that lead to harm. The rate of injuries varies from sport to sport, depending on factors such as type of contact (eg, player-to-player contact and no contact), type of game (eg, practice and off season), site of injury, presence of prior injury, player's age, and, somewhat surprisingly, gender.^{3,9-14}

The difference in injuries by gender has become particularly apparent with the increase in girls participating in team sports after the passage of Title IX of the Educational Assistance Act (requiring equality of resources for female athletes) in 1972, and the differences are dramatic. For example, a meta-analysis found that the female to male incidence ratio for anterior cruciate ligament tears from soccer was 2.7 to 1.¹⁵ Therefore, preventive strategies should take this information into account.^{16,17}

Fortunately, as reported in this issue of the *Archives*, Kiani et al¹⁸ have developed an intervention regimen that substantially reduces soccer-related knee injuries among teenaged girls. They report that this highly effective in-

tervention reduces knee injuries by 77% and noncontact knee injuries by 90%. Although the intervention was not randomized, the teams receiving the intervention were similar to those not receiving the intervention. The number of matches compared with training sessions was higher among the intervention team, but the investigators adjusted for this difference and other potential confounding variables in their multivariable analysis.

Significantly, Kiani and colleagues' regimen is easy to implement and inexpensive and requires no equipment. First, parents, players, and team leaders are educated on the prevention of knee injuries. Next, players and coaches are trained on the correct way to do the exercises. Finally, teams adhere to a training regimen consisting of warm-up, muscle activation, balance, strength, and core stability twice a week during preseason training and once a week during the regular season. Because teams typically exercise before practices and games, incorporating this regimen can improve efficacy without increasing time or expense. The routine itself, with illustrative pictures, is included as supplementary material on the *Archives* Web site to facilitate dissemination of the intervention. (Indeed, my coauthor and I have a personal interest in disseminating Kiani and coauthors' intervention because we both have daughters who play soccer.)

Undoubtedly, part of the success of the intervention derives from its development by a physician in collaboration with an orthopedic surgeon, a physiotherapist, and soccer coaches, specifically for female soccer players. The use of an interdisciplinary team to develop an intervention (with parents and coaches promoting healthful behaviors and players performing exercises that stretch and strengthen muscles while promoting balance) is likely to be successful not only in preventing other soccer-related injuries¹⁹ but also in preventing injuries in other competitive sports such as football,²⁰ basketball, and tennis. Kiani and colleagues have therefore provided an innovative roadmap for preventing sports injuries that may be adapted to a variety of sports besides soccer.

While improvements in both diagnosis and treatment for sports injuries have been impressive in recent years, Kiani and coauthors present a simple, inexpensive routine to avoid injuries in the first place. Reprints of their article, of course, are available for your daughter's, granddaughter's, or niece's coach.

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Financial Disclosure: None reported.

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