



## CORR Insights

**CORR Insights®: Does the FIFA 11+ Injury Prevention Program Reduce the Incidence of ACL Injury in Male Soccer Players?**

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**Where Are We Now?**

**D**espite considerable research into almost every facet of the ligament's biology, ACL tears continue to plague athletes of all ages. The risk of tearing an ACL is multifactorial and includes anatomical, hormonal, biomechanical, and

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neuromuscular factors [4]. Women are four to six times more likely to injure their ACLs than are men [4]. Approximately 70% of ACL injuries are noncontact, suggesting that there is a biomechanical and/or neuromuscular deficit that may contribute to ACL tears, especially in women [4]. Surgical reconstruction can restore knee stability, but patients remain at risk for reinjury [2].

Considerable interest and research has sought to identify these deficits and use exercise training programs to correct, or possibly prevent, ACL tears [6]. In their study, Silvers-Granelli and colleagues performed a cluster-randomized control trial to determine the efficacy of one such prevention training program, the Federation Internationale de Football Association (FIFA) 11+. The FIFA 11+ is an easy-to-implement, straightforward exercise program that can be performed as an

on-field warm-up before practice or games without much equipment. Their analysis showed a 77% decrease in the overall incidence rate of ACL injuries in the group that used the FIFA 11+ program compared to the control group. While previous ACL-tear prevention studies have predominantly targeted women athletes because of their higher risk of ACL injury [6], the current study included only men, confirming that these training programs can have similar impact on both men and women.

**Where Do We Need To Go?**

In a recent motion-analysis lab study testing the FIFA 11+ [7], preadolescent athletes demonstrated some (but not complete) improvement in peak valgus moments and other biomechanical factors associated with the risk of ACL injury after implementation of the program—suggesting that there is room to improve and still much to learn about how these prevention programs exert their protective effects.

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Strategies for implementing prevention programs need to be planned or augmented at all levels and ages, and identifying the best implementation personnel will be important. Coaches may be the best instigators of implementation [3]. In fact, Switzerland successfully implemented a country-wide FIFA 11+ program for their amateur soccer leagues through a large-scale coaching education campaign [3]. Additionally, a randomized control study of FIFA 11+ implementation strategies identified preseason coaching workshops to be an effective method for implementation and adherence to the program [1, 5].

A better understanding of the gaps in knowledge regarding prevention programs is needed. For example, the role of the sports medicine surgeon and nonoperative sports providers in increasing participation in these types of programs is not well-defined. Often, surgeons are not on the front lines of prevention strategies, as their first encounter with the athlete is after an ACL injury. Yet, these specialists are relied upon by patients, parents, coaches, and athletic trainers for valuable input at all points in the process.

The facilitators and barriers to greater implementation of ACL injury prevention programs need to be further studied. Increased marketing to athletes and parents, as well as further education across the board for

physicians, therapists, and trainers could potentially increase athlete participation and adherence to ACL injury prevention programs.

As broader implementation and acceptance is sought, we, as a sports medicine community (physicians, therapists, trainers), must decide which program to use and whether a consensus can be forged around a single prevention program. The existence of numerous programs may be a barrier to implementation, while a single program would help streamline its delivery to players and coaches while facilitating consistency of future research.

### How Do We Get There?

A recent meta-regression study [6] identified the common elements from all previous ACL injury prevention programs. The study identified age, dosage of training, variations within training, and verbal feedback as the most substantial factors for a program's success. Based on this, prevention programs should target young athletes, ensure compliance and adherence to training regimens (what was referred to as "dosage of training"), practice regimens that use a variety of exercises (balance, strength, plyometrics), and provide some degree of coaching or instruction (verbal feedback). These may be helpful

foundations on which to begin building consensus on best prevention programs and which athletes to target to deliver maximum benefit.

Population-based studies examining the effects of marketing campaigns, education programs, and who to best target (athlete, parent, coaches, physicians) will help to identify where to invest resources. Once successful models of implementation strategies are elucidated, the required resources and costs will be better understood and the cost-effectiveness analysis of these ACL injury prevention programs can be determined from the reduction rates of ACL tears compared to the individual and societal costs of ACL injury and treatment.

Coaches and athletic program administrators will demand this information to determine if prevention methods are worth the investment. Although the current study did not report on cost, the authors stressed the importance of cost-effectiveness data and recommended further study.

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