Clinical Question
How effective are anterior cruciate ligament (ACL) injury prevention programs?

Evidence-Based Answer
ACL injury prevention programs reduce the incidence of ACL injuries by at least 50% in a variety of sports, and should be used for all athletes. There is no evidence that any particular prevention program or component is superior. (Strength of Recommendation: A, based on meta-analyses of randomized controlled trials and cohort studies.)

Evidence Summary
In 2015, a meta-analysis evaluated the effectiveness of knee injury prevention programs in male and female high school and young adult athletes. Among the 12 studies included, eight were randomized trials and four were prospective cohort studies totaling more than 17,000 athletes. These studies included several sports and a variety of injury prevention programs. The programs were comprised of exercises to improve neuromuscular and proprioceptive abilities. The meta-analysis found a 51% decreased risk of ACL injury in athletes who participated in the neuromuscular and proprioceptive prevention programs vs. the control group (incidence rate ratio = 0.49; 95% confidence interval [CI], 0.29 to 0.85). Meta-regression analysis did not find any specific intervention component to be superior.

In 2013, a systematic review with meta-analysis identified 14 studies, including six randomized controlled trials and eight observational cohort studies—10 of which were included in the 2015 meta-analysis discussed previously—that evaluated the effect of neuromuscular and education programs on ACL injury rates. The review included approximately 27,000 male and female athletes 13 to 26 years of age. The meta-analysis yielded a pooled injury rate ratio for ACL injury of 0.49 in the intervention group (95% CI, 0.30 to 0.79) compared with the control group. In the meta-regression analyses, the estimated effect was stronger in nonrandomized studies and in those with more training hours per week, multiple seasons of follow-up, better compliance, no drop-outs, and soccer players. There was significant heterogeneity in the studies (P < .01), and the variability of estimated effect was not explained, but comparison with other meta-analyses supports the validity of the conclusions.

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References

Help Desk Answers provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (http://www.cebm.net).

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