FPIN's Help Desk Answers

Effectiveness of ACL Injury Prevention Programs

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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.[1] 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.[2] 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

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2. Gagnier JJ, Morgenstern H, Chess L. Interventions designed to prevent anterior cruciate ligament injuries in adolescents and adults: a systematic review and meta-analysis. *Am J Sports Med.* 2013;41(8):1952-1962. ■

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