

RISK FACTOR SCREENING AND PREVENTION

What We Know

1. Various training programs that incorporate elements of balance training, plyometric training, education, strengthening, and feedback alter biomechanical and neuromuscular variables thought to contribute to ACL injury.¹⁻⁵
2. Various intervention programs reduce the incidence of ACL injuries.⁶⁻⁸
3. The protective effects of ACL injury prevention training programs appear to be transient.⁹⁻¹¹

What We Don't Know

1. What are the mechanisms underlying the success of various injury prevention programs? Specifically, which elements of an injury prevention program (strengthening, plyometrics, etc) produce the desired protective effect?
2. How much training stimulus (ie, duration and timing) is required to produce the desired protective effect, and how long does the effect last?
3. At what age should an injury prevention program be implemented to reduce potential neuromuscular and biomechanical risk factors?
4. Do intervention programs need to be tailored to specific sports, specific ages, or an individual athlete's needs?

5. Do intervention programs influence athletic performance?

Where Do We Go From Here?

1. We should continue conducting prospective, randomized controlled studies to evaluate the ability of prevention strategies to alter neuromuscular and biomechanical risk factors and prevent ACL injury.
2. Evidence is emerging that the efficacy of ACL injury prevention programs is not uniform across all individuals (abstracts 29 and 31). Further research is needed to establish the characteristics of "responders" and "nonresponders" to an ACL injury prevention program.
3. To determine the optimal approach to alter biomechanical and neuromuscular risk factors thought to contribute to ACL injury, we should evaluate various intervention modalities (individually or in combination).
4. We need to develop and standardize screening tools to identify at-risk individuals who will benefit most from intervention programs.
5. How athletes of different stages of maturation respond to injury prevention programs should be evaluated.
6. The optimal timing of an intervention with respect to the competitive season should be determined.

7. Programs that improve compliance should be developed, and we need to understand why people comply or do not comply with programs.
8. The dose-response relationship with intervention and prevention programs should be investigated.
9. Whether injury prevention programs affect athletic performance should be evaluated.
10. Registries for ACL injury should be established to enable monitoring of long-term trends in ACL injury incidence, including sex differences.
11. Standard definitions for ACL injury should be developed to facilitate cross-study comparisons (eg, direct contact, indirect contact, and noncontact injury).

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