



Preventing  
**ACL INJURIES**  
— & —  
Improving  
**PERFORMANCE**

**Joint injuries** can sideline your players and have a long lasting impact on their health and well-being. Joint injuries, such as those to the anterior cruciate ligament, are one of the strongest risk factors for developing osteoarthritis – the most common form of arthritis affecting 27 million adults. Up to 50% of those with a diagnosed anterior cruciate ligament or meniscus tear will develop osteoarthritis with associated pain and functional impairment 10-20 years after injury.

A preventive training program should include exercises that are done 2-3 times a week over the course of the entire season, take no more than 15 minutes to complete, and can be incorporated by coaches into regular training sessions.

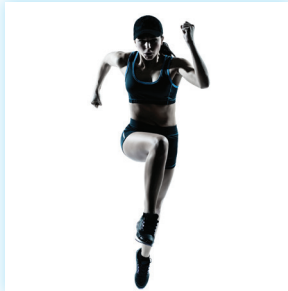
*In addition to reducing the rate of ACL injury, preventive training programs have also been shown to improve measures of performance such as vertical jump height, hop distance and speed, aerobic fitness and sprint speed.*

The following are examples of exercises that can be incorporated into a preventive training program. The exercises should be at the appropriate intensity and challenging, but proper technique and movement quality should be maintained.



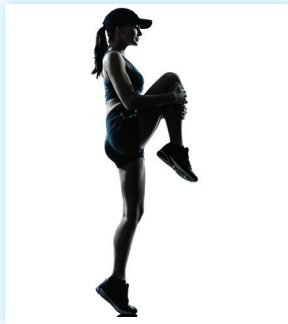
**Stretching (3-4 exercises):**

- calf, quadriceps, hamstrings, hip adductor, hip flexor



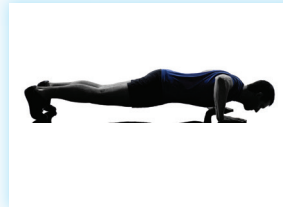
**Warm Up (2-3 exercises):**

- forward-backward jog, side shuffle, high knee skipping, carioca, butt kickers, arm swings, trunk rotations, leg swings



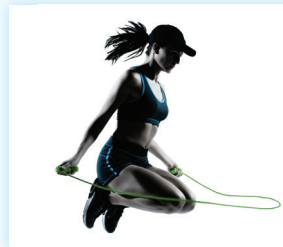
**Balance (2-3 exercises):**

- single leg balance (static), single leg balance with perturbation (ball toss, partner perturbation, unstable surface, upper body motion), dynamic jump/hop to balance



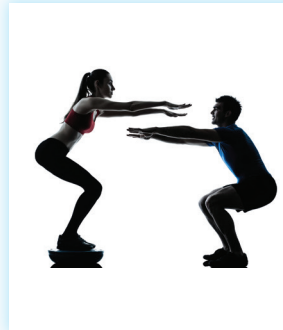
**Strengthening (2-3 exercises):**

- core musculature: curl ups, plank, push up
- hip / thigh musculature: squat, lunge, deadlift, russian hamstring curl, bridge



**Plyometrics (5-6 exercises):**

- double leg jumps (multi-planar), single leg jumps (multi-planar), single leg bounding, ladder drills, running & cutting



**Technique (verbal feedback on movement quality during all exercises):**

- bend knees and hips (land softly, light as a feather, act like a shock absorber)
- keep knees over toes (straight as an arrow)
- toes straight ahead

*Research suggests that ACL and other traumatic knee injuries can be reduced by more than 50% by using a preventive training program that combines flexibility, balance, strength, plyometric, agility, and technique training into exercise selection. Improvements in lower extremity strength/power and balance are also associated with preventive training programs.*



Examples of free preventive training programs that have been supported through research:

**PEP Program:** <http://smsmf.org/smsf-programs/pep-program>

**11+ Program:** <http://f-marc.com/11plus/home/>

**PEAKc Program:** <http://www.unc.edu/depts/exercise/peak/peak/Home.html>

For more information, visit [oaaction.unc.edu](http://oaaction.unc.edu)

