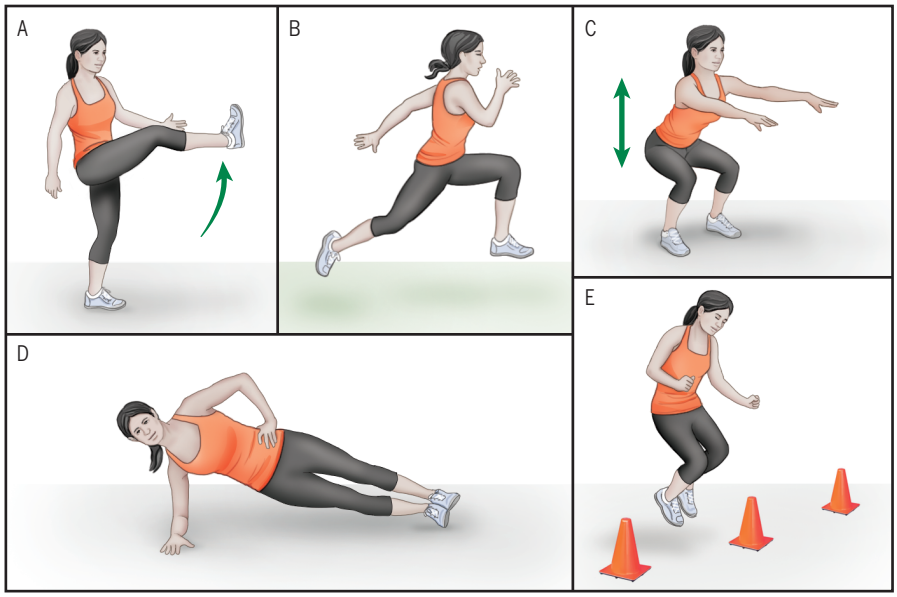
Knee Injury Prevention

Exercises to Keep You From Getting Sidelined

J Orthop Sports Phys Ther 2018;48(9):734. doi:10.2519/jospt.2018.0509

Knee and anterior cruciate ligament (ACL) injuries have the potential to sideline an athlete for an entire season or even more than a year. American founding father Benjamin Franklin famously said, "An ounce of prevention is worth a pound of cure." Does this quote hold true for knee injuries?

The simple answer is yes. The goal of a knee injury prevention guideline, published in the September 2018 issue of *JOSPT*, is to make recommendations based on the vast amount of published literature to prevent knee and ACL injuries. Whether you are an athlete, coach, or parent, this guideline outlines the best strategies to prevent injuries, based on scientific research. Ultimately, the best prevention strategies are the result of a combination of the leading science, the physical demands of the sport and/or athletic event, an assessment by the coach and medical team, and input from the athlete. This guideline helps inform the first step in that process.



EXERCISES TO PREVENT KNEE AND ACL INJURY. Programs effective in preventing knee and ACL injuries include (A) dynamic stretches or flexibility drills for the quadriceps, hamstrings, hip adductors, hip flexors, and calf muscles; (B) running drills, such as forward and backward running, zigzag running, and bounding; (C) strength training such as double- and single-leg squats, lunges, and Nordic hamstring exercises; (D) core strength exercises, such as planks and bridges; and (E) plyometric exercises, such as single-leg hopping forward and backward, ice skaters, and sport-specific drills. Programs should be customized to address the demands associated with a specific sport or athletic activity.

This *JOSPT* Perspectives for Patients is based on an article by Arundale et al titled "Exercise-Based Knee and Anterior Cruciate Ligament Injury Prevention" (*J Orthop Sports Phys Ther. 2018;48(9):A1-A42. https://doi.org/10.2519/jospt.2018.0303*).

This Perspectives article was written by a team of *JOSPT*'s editorial board and staff, Deydre S. Teyhen, PT, PhD, Editor, and Jeanne Robertson, Illustrator.

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NEW INSIGHTS

Expert clinicians and researchers screened 3526 articles, then closely examined 752 articles, and ultimately selected and summarized the 33 best articles for this clinical practice guideline. Guideline authors focused on determining whether these programs were effective in preventing injuries, which type of exercises were common across effective prevention programs, and key parameters of exercise intensity and duration required to prevent knee and ACL injuries.

PRACTICAL ADVICE

The evidence strongly supports the implementation by clinicians, coaches, parents, and athletes of exercise-based knee and ACL injury prevention programs *before* athletic training sessions or games. Programs effective in preventing injuries include a combination of dynamic stretches (flexibility), running drills, strength training, core strength, and plyometrics.

Athletes should complete these programs several times each week, with each session lasting at least 20 minutes, and they should exercise a minimum of 30 minutes weekly. These prevention programs should start during the sport's preseason and continue through the regular season.

To see results, clinicians, coaches, parents, and athletes should all help ensure that the programs are routinely performed before and during the season. Because most of the research studies they examined included high school and collegiate athletes, the researchers strongly recommend these programs for athletes between the ages of 12 and 25 years, and especially female athletes younger than 18 years of age. However, these programs may also benefit older athletes. Your physical therapist can work with you and your coaches to help design the right program for you.

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