Evidence-Based Knee Injury Prevention Programs

All athletes regardless of age, sex, sport

Programs for reducing all knee injuries include 11+ and FIFA 11, HarmoKnee, and Knäkontroll; and those used by Emery and Meeuwisse, Goodall et al., Junge et al., LaBella et al., Maliou et al., Olsen et al., Pasanen et al., Petersen et al., and Wedderkopp et al.

Programs for reducing ACL injuries include HarmoKnee, Knäkontroll, Prevent Injury and Enhance Performance (PEP), and Sportsmetrics; and those used by Caraffa et al., Heidt et al., LaBella et al., Myklebust et al., Olsen et al., and Petersen et al.

Specific populations

- Female athletes (especially those under 18 years of age)
- Soccer players
- Team handball players

Programs that could be beneficial for preventing knee injuries: PEP, Knäkontroll, and HarmoKnee

Programs that could be beneficial for preventing ACL injuries: Caraffa et al., Sportsmetrics

Dosage and Delivery

Programs should involve multiple components, have a session duration greater than 20 minutes, have a weekly volume greater than 30 minutes, start in the preseason and continue through the regular season, and be performed with high compliance

Implementation

All young athletes, not just those screened as high risk, particularly athletes aged 12 to 25 years participating in high-risk sports (defined as rugby, Australian rules football, netball, soccer, basketball, and skiing)

Flexibility (dynamic stretches)
- Quadriceps
- Hamstrings
- Hip adductors
- Hip flexors
- Calf

Running
- Forward running
- Backward running
- Zigzag running, forward and backward
- Bounding

Strength
- Double-leg squat
- Single-leg squat
- Lunges
- Nordic hamstring exercise

Core
- Prone plank
- Bridges

Plyometrics
- Single-leg hopping, anterior/posterior
- "Ice skaters"
- Jump to header or catch ball over head (depending on sport)

FIGURE 1. Treatment algorithm based on clinical practice guideline findings. The exercise-based knee injury prevention programs heading summarizes the programs observed to be effective when studied across populations. Below the exercise-based knee injury prevention programs heading are the specific populations. These 2 groups (exercise-based knee injury prevention and specific populations) are not mutually exclusive; all programs found in the specific populations area are also found in the exercise-based knee injury prevention area. However, the program listed for specific populations may be more effective or may have been studied in detail in that particular group. The dosage and delivery and implementation sections provide a summary of recommendations on how programs should be set up and executed.
