

Performance Point

Prevention of Knee Injuries

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Knee injuries are common in sport. If a sport calls for frequent, fast direction changes, pivoting, unstable surfaces, high velocities, or repetitive foot impact there is a high risk for knee injury. Further, women are two to four times more likely to experience a knee injury sometime in their athletic career.

The good news is that by employing a few training strategies, athletes can minimize risk and maximize the likelihood of maintaining healthy knees throughout their career and later in life.

Most injuries occur when an athlete is still trying to perform while fatigued. Under fatigue, reaction time is slower which can lead to a fall or poor form and the muscles that normally support the movement may be replaced by secondary weaker muscles. Add to this to a few muscle imbalances and/or previous injuries and a knee injury is more likely to occur.

Preventing knee injuries is all about planning. Specifically, athletes and coaches need to ensure they employ best practice training and competition strategies. The basics are:

1. Periodization that balances overload and recovery (mental, physical and nutritional)
2. Variety in training
3. Sport Preparedness: adequate baseline fitness
4. Functional strength of the muscles that stabilize the knee
5. Proper equipment
6. Safe training surfaces
7. Proper mechanics (technique)

As illustrated in the table, there is a number of exercises that can be incorporated in everyday training to help reduce the risk of knee injury.

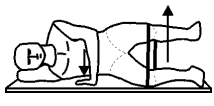
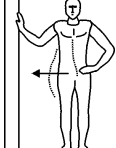
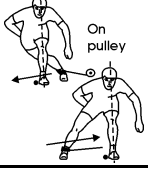

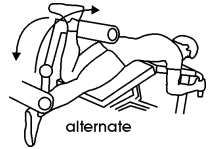
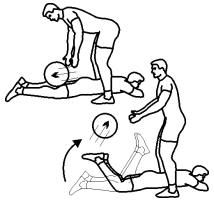
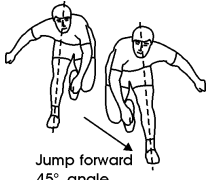
Basic Principles

Frequency: Stabilization exercises should be performed at every training session.

Intensity: Small stabilizer muscles have more slow twitch fibers and are designed for endurance (constant stabilization) therefore starting with 12-15 reps and moving to 20-30 reps is recommended. Hamstring and plyometric exercises should be introduced in the later stages of preparation.

Time: Generally, perform one to three sets of three to four exercises.

Type: A Strength and Conditioning Coach can advise when best to introduce the variety of stability, strengthening, endurance and proprioceptive exercises.

Exercise	Purpose	Sets and Reps
	Muscular endurance: strengthen gluteus medius and external hip rotator	3 x 20-30
	Stabilization of the hip and knee: controlled hip drop and draw in	3 x 15-20
	Hip and knee stabilizer strengthening with balance and proprioception work	3 x 20-30
	Strengthening of vastus medialis	3 x 10-15 (depending on training cycle)
	Hamstring strengthening	3 x 1-15 (depending on sport, and training cycle)
	Hamstring strengthening: proprioception and activation	3 x 10
	Dynamic knee stabilization and proprioception	2-5 x 3-12 depending on training cycle

Exercises to stabilize the knee and prevent injury.

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