



# Prevention of Knee Injuries in Female Athletes

By Marilyn J. Hintz, MS, ATC/L, CSCS

Knee injuries, especially non-contact knee injuries, are very preventable with an appropriate training regimen. Once an athlete sustains a knee injury, it is obviously necessary to rehabilitate the body in order to both heal the damage as well as prevent future injuries. The shift of focus away from treatment and rehabilitation toward injury prevention and prehabilitation is necessary because knee ligament injuries are very costly. For example, ACL reconstructive surgery can lead to a potential loss of seasons of sports participation, scholarship funding, lowered academic performance, long-term disability, and significantly greater risk of future osteoarthritis.

It is possible to build a proper foundation and gain the ability to play in sport at a high, competitive level without injury or pain. The pre-habilitation that all young females should utilize focuses strictly on the prevention side of the equation so that rehabilitation will not be necessary. It is always the goal to prevent harm from occurring, so why not take every measure to eliminate potential risk factors early on?

Puberty is the key time to intervene and begin strength training with female athletes as they are still young and their bodies and minds are able to adapt to the new neuromuscular patterns very quickly. It still requires time, dedication, discipline, and effort, but every young girl will see the benefits of sticking to a program.

Female athletes demonstrate less lower-leg strength and endurance and lack sufficient firing patterns of key muscles that can assist in the dynamic stability of the knee joint. By nature, women often lack the ability to effectively dissipate forces on landing.<sup>1</sup> Core and leg-strength exercises as well as agility and landing exercises should be a focus in a preventive or rehabilitative program.

Preventative training programs may include: learning and applying proper core activation techniques, gluteus medius strengthening, proprioception and joint position sense, postural control, proper muscle activation through total body strengthening, and selected vertical ground reaction forces during landing. One study shows that neuromuscular training programs decreased peak landing forces, reduced valgus and varus torques at the knee (the knee collapsing in or turning out upon landing), increased hamstring function, and increased jump height in young female athletes.<sup>2</sup> This same study affirms that plyometric power, biomechanics and technique, strength, balance, and core stability training can induce neuromuscular changes and potential injury effects in female athletes.<sup>3</sup> There is strong evidence from this study along with many others, that neuromuscular training that combines core activation as well as total body neuromuscular control not only decreases the potential biomechanical risk factors for lower extremity injury, but also provides performance enhancement effects.

**So call or email me today and put yourself on the path to avoid knee injury. You deserve it!**

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<sup>1</sup>Ferris CM, Freedman AD. Neuromuscular and biomechanical lower extremity training for female athletes. *Athl Ther Today*. 2001;6:54-62.

<sup>2</sup>Myer GD, Ford KR, Hewett TE. Methodological approaches and rationale for training to prevent anterior cruciate ligament injuries in female athletes. *Scand J Med Sci Sports*. 2004;14:275-285.

<sup>3</sup>bid.

**info@EfficientMovement.com • (602) 358-8862**