



St. Francis Sports Medicine

Knee Care for Female Athletes

Knee injuries account for **25%** of all **sports injuries in females**. It is important to learn how to jump and land to **prevent injuries**, in particular anterior cruciate ligament (**ACL**) knee injuries.

Female athletes have an overall ACL knee injury risk of **1 in 50**. **Women** are **4-10 times more likely** to suffer an **ACL injury** than men in university sports.

Reasons for increased incidence of knee injuries in females athletes:

- Females play sports in a more upright position causing weak trunk, hip and leg muscles.
- Females jump with incorrect knee position on take-off and land in an upright position thus allowing the knees to move side to side or twist during landing sustaining injury.
- Females tend to have a wider pelvic angle and increased low back curve (lordosis), factors that result in the femur (upper leg bone), rotating inward and the knees assuming a “knock knee” position which places increased stress on the ACL.

Regardless of the sport, the basic rules of knee care apply:

- Strengthen muscles with a female specific, functional training program that focuses on hips (gluteals), hamstrings, back and abdominals. Hamstrings help to stabilize the ACL and are usually weaker than quadriceps in female athletes.
- Flexibility/stretching of the hamstrings is very important in maintaining adequate leg strength (quadriceps) and protecting the ACL.
- Learn how to jump and land properly. Female athletes should always have a good strength and flexibility base **BEFORE** starting a jump training program.
- Learn how to run properly. Female athletes need to learn the proper form, biomechanics and foot strike technique to contribute to a smooth, efficient motion and help prevent overuse injuries to the knee, hip, back and foot.
- Maintain good posture. Rounded shoulders (kyphosis), swayed back (lordosis), curvature of the spine (scoliosis), flat feet and other postural problems can affect correct form with sports training.
- Train the **CORE** which includes the lower abdominals, back and especially the hips in order to be able to maintain a knee-protecting position.
- Prepare properly with a conditioning program that includes sport-specific strengthening at least 8-10 weeks before the season begins. This program should also include balance, plyometrics and agility training.
- Minimize knee stress while cycling. Make sure the seat of the bike is at the proper height and avoid high gears.



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- Ensure proper shoe wear. Worn out or improperly fitted shoes may put the knees at risk. Outside of workouts, avoid wearing high heel shoes for long periods of time. If the female athlete has “flat feet”, custom made foot supports or orthotics may be necessary to allow for correct alignment.
- Proper nutrition and hydration is essential to avoid osteoporosis or the “female athlete triad”. Consult a nutritionist/dietician to ensure the female athlete is getting the proper nutrition on a daily basis in relation to activity level.

CORRECT JUMPIING

Take off:

- “Thumbs-up rule” – driving or punching to arms and hands with thumbs upward on the jump can account for about 10% of the height jumped.
- Bend the knees more and squat down further before you jump. This allows the hips, knees and ankles to be flexed more allowing for more strength.
- Keep a neutral spine and not a rounded back.
- Keep knees over the feet and not beyond the feet and do not allow knees the “knock” together.

Landing:

- Land softly without loud landing or slap on the floor.
- Land on the balls of the feet and sink into the heels.
- Land with hips, knees and ankles flexed or bent to absorb the landing forces.
- Maintain a straight back, neutral spine position.
- Land with chest over knees and knees over feet and no “knock-knees”.
- Always try to land on two feet to absorb the landing forces (landing force is 5 times the body weight).