

Health

Training Tips To Help Avoid ACL-related Injuries

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In the May issue of VYPE, we began a discussion on ACL injuries and how they more frequently occur in female athletes than they do in their male counterparts. In that issue, I suggested that the reason of this higher frequency was based on differing lower body alignment and mechanics as a probable cause. This month, we'll take a look at several training methods and exercise programs that will hopefully make these proper alignment positions instinctive in all your athletic activities. Proper alignment is a combination of strength and flexibility of the core, thigh and leg muscles. The following are some recommended exercises, with a description of how they should be completed, that should provide you with greater strength and flexibility in these areas and reduce the risk of an ACL-related injury. These exercises should be supervised and it is not recommended that they be performed without a certified trainer or qualified therapist. For the purpose of this column, we've provided photos for two of the exercises below. The online version of this article has additional photos showing how each of the additional exercises should be performed.

Leg Exercises:

Quadriceps: Squats and lunges. As always, proper form is paramount. It is better to avoid these exercises than to perform them incorrectly. The athlete should keep the knee over the toe—both pointed forward, chest and chin up, as well as allowing both the ankles and hips to flex slightly. The figures below demonstrate the proper form.



When performing Squats, it is important to keep your knees directly above your toes (Photos by Danielle Willsie).

Calf: A very simple exercise, such as a calf raise can be of immeasurable benefit to strengthen the lower leg. (See photos online.)

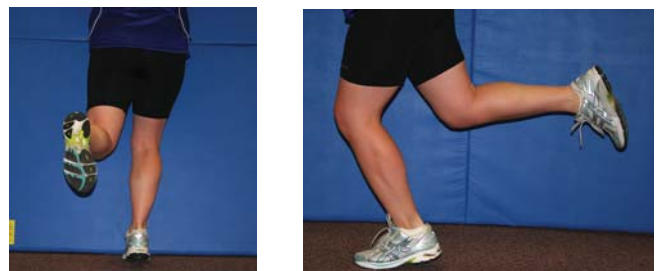
Hamstring: The ACL and the Hamstring work together to prevent the shin bone (tibia) from moving forward on the thigh bone (femur). Training the hamstrings using a physioball

also incorporates core stability and balance. To perform this exercise the athlete lifts the hips up, while pulling and pushing the ball away from the body. (See photos online.)

Hip Abductors: A collection of muscles in the gluteal region are responsible for stabilizing our hips as we run and walk, providing a foundation upon which our entire leg works and is balanced. When these muscles are weak or uncoordinated, all joints of the lower limb are in danger of injury. Two very simple exercises are sufficient to train these muscles. It is important to stand tall and not "drop" the hip on the weight-bearing leg to achieve the motion. (See photos online.)

Plyometrics: Plyometrics is another technique used to train proper mechanics of the leg. The box jump is one of the easiest exercises to perform. The athlete stands on a plyobox in a squat, jumps up and lands first on the balls of the feet (if done correctly, landing will be nearly silent), with ankles, knees and hips bent, chest and chin should be up. (See photos online.)

Running Form: The figures below demonstrate the appropriate lower extremity alignment when running (hips, knees and ankles in alignment with body weight centered).



Running with good form, knees and hips facing forward, all major joints in a flexed, energy absorbing position.

Please note that these training techniques are advanced and should be performed only under the guidance, supervision and instruction of a qualified therapist or athletic trainer. With diligence and guidance the athlete will be able to improve overall athletic performance. While no prevention program is 100% effective, maintenance of proper technique is helpful for optimum performance and health of our athletes.

Dr. Galland is a Board Certified Orthopaedic Surgeon specializing in Sports Medicine practicing in Wake Forest and North Raleigh. He currently serves as: Team Physician and Orthopaedic Consultant to the Carolina Mudcats, AA Affiliate of the Cincinnati Reds of Major League Baseball; Medical Director and Orthopaedic Consultant to the Louisburg College Athletic Program and Team Physician and Orthopaedic Consultant to several area high schools. Dr. Galland has authored book chapters and papers in Sports Medicine. His advice and consultation is routinely sought by World Class Athletes of Track and Field and Major League Baseball. His passion for resolving musculoskeletal ailments and injuries in the most conservative manner possible puts all his patients in the most capable and caring of hands. He is available for consultation and you may schedule an appointment at www.orthonc.com or by phone 919-562-9410.