

Family Physical Therapy Services, Inc.

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Oct/Nov 2015 Newsletter

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The X's and O's of ACL Tears *By Tom Fontana, MSPT*

For any force your body generates, or for forces external to your body, something in your body needs to be stable enough to deal with those forces. Your skeleton, ligaments and fascia (the tough connective tissue throughout your body) are the “passive” restraints that deal with some of these forces (“Passive” meaning that you have no active control over what these structures do). The other way your body deals with these forces is by using your muscular (“active”) system.

The primary function of the ACL is to prevent the shin bone from moving forward relative to the thigh bone during activities. But contracting your hamstrings also limits this motion. The ACL also prevents your knee from moving sideways inwards. The muscles that act directly on the knee (i.e., quadriceps and hamstrings) can't prevent this motion, but the muscles of the ankle and hip can.



So, how do you know if you are predisposed to injury? If you land from a jump in a very upright, stiff-legged position, you are allowing your passive structures (including your ACL's) to disperse that shock (and you may feel

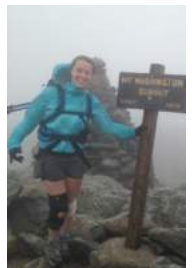
that shock even into your head or teeth). If you land in a squat position, you will have allowed your muscles to deal with a lot of that shock.

Similarly, if when you perform a squat or you land from a jump your knee(s) bend inwards then you are letting your ACL prevent it from going further instead of your ankle and hip muscles. This is something you might be able to see yourself if you jump/land facing a mirror but you may need someone else to watch you and give you feedback.

One other factor that can lead to ACL tears is fatigue. Even with the best of mechanics, at a certain point the muscles that keep you stable may fatigue and then won't do the job you want. If you are training and want to do that last rep or at practice and are dead tired or skiing and want to do that “last run” before packing it in for the evening, if you know that you are exhausted then listen to your body. If the stabilizing muscles are still fresh and your form is good then go ahead and exhaust your power muscles. But, if you notice a decrease in your form, let it go and fight again another day. Your ACL's will thank you. (cont. p 2)

Success Story of the Month *By Courtney Koffink*

The process of recovery from tearing my ACL and meniscus was a humbling experience to say the least. Prior to my injury, I played on my college rugby team, was an avid hiker, and a regular at my local crossfit ring. I thought that after my surgery I would be back at it within a couple of months. However, I was horrified when I realized I could not even bend my leg, let alone walk for three months. Around that three month mark, I started going to Family Physical Therapy. The staff was extremely dedicated and knowledgeable on the process of my recovery. Everyday I went in, they would assess what my knee needed whether that be the ice machine or new strengthening exercises. Throughout my journey of recovery they continued to push me to strengthen myself. Since I finished my sessions at Family Physical Therapy, I have been able to go rock climbing and even hike Mt. Washington this summer. I started doing yoga and hope to be returning to crossfit shortly. I will forever appreciate being able to walk and the help and support I got from everyone at Family Physical Therapy. **It is great to be doing what I love again!**



Cont. from page 1

If you're unsure if the way your jumping or squatting predisposes you to injury, you are a perfect candidate for our free screening! Not only can we tell you if you are, we can suggest a few exercises (like in this issue's insert and how to perform them (see "ACL Injury Prevention—Crucial for Student Athletes", below) that you can try without necessarily becoming a patient. If we find a deficit that is so pronounced, or you don't like the idea of strengthening unsupervised, then we'd be more than happy to treat you as a patient.

FPTS Community Activities: On Sept 30th, Dan Baram, PTA, CSCS gave a lecture to The Union Leader on Healthy Eating, Exercise and Weight Management.

Notes from our extended "family": "Two years ago I started having pain in both feet. M.D. after M.D. could only tell me I had arthritis in my feet, but no cure. I asked my family doctor if I could go to PT and I had Tom and Dan (a real good team). With their guidance, after a few months and a lot of exercise, I no longer have foot pain. If I ever need PT again FPTS is the ONLY place to go. Great people, great results." ~ *James Killpatrick*

ACL Injury Prevention—Crucial for Student Athletes

By Dan Baram, PTA, CSCS

Twenty years ago Anterior Cruciate Ligament tears were the sudden death of many athletic careers. Fortunately, in the modern age we live in, surgery and rehabilitation have come a long way and careers no longer have to end due to an ACL tear—instead, they are put on hold for about a year. Better, but still not great. Thankfully the health and fitness community has found a way to get out in front of this devastating injury by identifying key areas to strengthen to decrease their likelihood.

Unfortunately, female athletes are at significantly higher risk for injury than males at least partially due to their anatomical make up (see "The X's and Y's of ACL Tears" on page 3), but even so males are not immune. Anyone who has a strength imbalance with stronger quadriceps than hamstrings and/or weak ankles or hips will be predisposed to ACL or other knee injuries. Though it is unclear why, females also more commonly have these strength imbalances or deficits. Those who play soccer or basketball have the highest risk (see "The X's and O's of ACL Tears on page 1 to see if you're at risk), but all athletes of either gender should take preventative measures to keep their ACL's safe.

The most prevalent reason ACL's get torn is from what is technically termed a "valgus" knee (when the knee collapses in), especially during squatting motions or jumping and landing. Practicing proper squatting and jumping and landing technique will help teach athletes how to move safely.

Proper technique is more than just looking good while you perform an exercise. Performing them a certain way strengthens specific muscles. When performing a squat, as your knee bends only let it move as far forward as the tip of your toes. After that, if your thighs are not already near horizontal to the ground, you need to perform more of a sitting down motion by moving your rear end backwards (and most people say this is difficult—precisely because they are weak!). This lessens the force on the shin bone moving forward on the thigh bone and also allows you to engage your hamstrings more. Win-win to save your ACL's.

The other technique we have people concentrate on while squatting/jumping/landing is to make sure you keep your knees tracking over your middle toes. In this way, you use your ankle and hip muscles to prevent your knee from moving inwards. Get good at practicing these slowly and then perform them faster and faster and soon it will be second nature for you to move this way during your sport.

While it is impossible to prevent all injuries, a little work can go a long way when it comes to preventing ACL injuries, especially the ones that occur without any contact. So get your student athletes to strengthen properly to keep their knees healthy for the upcoming sports year. Take a look at this issue's insert to learn more about exercises to prevent ACL injuries.



Therapeutic Work Solutions Info Corner

By Steve Lisowe, MSPT

ACL Tears: To Repair or Not—What You Knee-d to Know

A tear of the ACL (anterior cruciate ligament) of the knee is a headline grabber in professional sports and can occur from contact (e.g., New England's own Tom Brady) or non-contact (e.g., Wes Welker of the Pats and Jordi Nelson of my beloved Green Bay Packers). While there are a few athletes who have played professionally with ACL-deficient knees most elect, or need, to have an ACL surgically repaired. Most often, a repair involves taking a graft (either from the patient's own patella tendon or hamstring or from a cadaver) and creating a "new" ACL (otherwise known as ACL reconstruction). Fully rehabilitating the leg from pain; swelling; and range of motion, strength and balance deficits takes an athlete out of the sport for about a year. Though it may be a no-brainer for most pro athletes to undergo surgery, what about for you?



There are several factors to consider whether surgery and subsequent rehab is worth it to you. When considering surgical repair, your age, activity level, surgical tolerance, and dedication to intense rehab should be considered. Activity level is a much better indicator of need than age. A conservative (non-surgical) approach may be right for a person who only participates in low-demand sports or who lives a sedentary lifestyle and doesn't experience any knee instability ("giving out"). Surgery would be more advisable if more than one structure is damaged (see "The 'X's and Y's' of ACL tears" below), or if higher-demand sports are played. A young person whose bones are still growing may also want to wait, as surgery could affect growth. Finally, there's a heightened risk for developing arthritis in ACL-deficient knees as they tend to be more unstable than those that have been repaired. If you tear your ACL at a young age, you have more years to potentially develop arthritis and may not want to risk that so you may elect for surgery, whereas an older person may not live long enough for the increased risk of arthritis to matter and may elect to go without.

For those that choose to go the conservative route, there are still likely to be issues with pain; swelling; and range of motion, strength and balance deficits, though not to the same degree as the surgically repaired knee. To get the most out of the knee, physical therapy to address these deficits is usually necessary or at least advisable.

Although the theoretical recovery for those skipping surgery is shorter (3 months vs. 4-6 months), the reality is that rehabilitation can take much longer in both cases depending on the person's level of activity and number of other structures injured. The influence of the hip and ankle on the knee must also be assessed. There's no need to rush into a decision though. Most surgeons wait a month or so for swelling to subside. We're one call away if you knee-d advice making a decision and are always here to help you rehabilitate your ACL tear whether you elect to repair it or not!

Pre & Postnatal Info Corner

By Effie Koustas, MPT

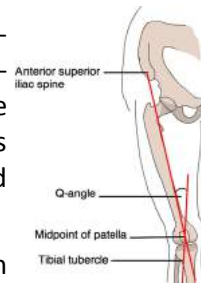
The "X's and Y's" of ACL Tears

With soccer season in full swing this fall, don't be surprised if you hear the news highlights of athletes getting hurt, specifically tearing their anterior cruciate ligament, or ACL. Although the ACL is the most common knee ligament injury, it can also be accompanied by tears of the medial collateral ligament (MCL) and medial meniscus. This combination has been coined the "unhappy triad" or "terrible triad" and is the most common multi-ligament injury. What you might not realize is that females are more susceptible to such injuries than males.



Why a higher risk for females? Although many studies and research trials have clearly identified that females are currently at a higher risk for tearing their ACL's, it is much more difficult to determine what the exact cause for this may be. Some research suggests that hormonal changes associated with the menstrual cycle may adversely affect the ACL. In addition, there are several anatomic differences between the genders that may contribute to injury risk.

First, a larger "Q-angle" puts females at greater risk. The Q-angle is measured by the angle formed between the quadriceps (thigh) muscle and patella (kneecap) tendon. Anatomically, a woman's pelvis is wider for child-bearing purposes. If a valgus deformity (a knock-kneed position) is present, that can place more stress on the knee joint. Second, the shape of the notch in the knee joint where the ACL attaches may predispose females to these tears. The notch can be either U- or V-shaped, and one surgeon noted seeing more ACL tears in V-shaped notches.



While these anatomic/physiologic factors may increase females' risk for ACL tears, what do you do with this information since there isn't anything you can do about them? Fortunately, these aren't the only things associated with risk for ACL tears. There is no proven formula for preventing the tears but understanding and addressing the biomechanical factors of the knee has been shown to reduce the risk (see "The 'X's and O's' of ACL Tears" in this issue) regardless of gender.

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**FREE Inside: Exercises
to Help Prevent ACL
Injuries**

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FREE INSIDE THIS ISSUE:

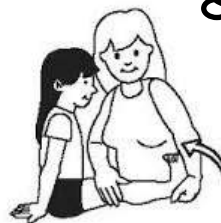
EXERCISES TO HELP PREVENT ACL INJURIES

FREE INJURY SCREENING

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Exercises To Help Prevent ACL Injuries

Physical therapists recommend that female athletes perform a series of exercises to improve strength, flexibility, and coordination, as well as to counteract incorrect existing patterns of movement that may be damaging to their joints. These movement patterns may put them at greater risk for injuring their Anterior Cruciate Ligaments (ACL).

These exercises demonstrate a sample of an injury prevention program and are not intended as a substitute for a treatment program designed by a physical therapist or other health care professional.

Call 644-8334 to schedule an appointment today. Visit us at: www.familyptservices.com, or contact us at: info@familyptservices.com

1 Single Leg Balance:

Stand on one leg with your knee slightly bent and attempt to maintain your balance for 15 to 30 seconds. Keep your hip, knee, and foot aligned with hip over knee over foot. Do 1-3 sets of 8-12 repetitions on each foot. As this task becomes easy, make it more challenging by increasing the time you stand on your foot and by standing on a soft surface, such as a pillow or foam pad.



2 Heel Touches:

Stand on one foot on a solid and sturdy box or a step with the other foot off the edge. With your hands on your hips, bend your stance leg and lower your body down until your opposite heel, on the hanging leg, touches the ground and then push back up. Keep your hips level and your hip, knee and foot aligned while you execute this exercise. Do 2-3 sets of 8-12 repetitions on each foot. If you feel pain in the front of your knee, select a lower step height or discontinue this exercise.



3 Wall Squats:

Lean up against a wall with your back against it and your feet 12-24 inches away from the wall. Bend your knees and slide down the wall until your knees are directly over your ankles. If your knees are positioned over your toes, you have squatted too far. Hold this position for 10 to 30 seconds and push back up to standing. Do 1 set of 5-10 repetitions. To increase the challenge of this exercise, increase the time you hold the squat position and/or add a resistance band around the top of your knees. If you experience pain in the front of your knee, try decreasing the depth of your squat or discontinue this exercise.



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4 Single Leg Bridge:

Lay on your back with one knee bent slightly and one leg straight. Using the bent leg as your support leg, elevate your trunk and hips, bringing your shoulders, hips and leg in a straight line. Hold this position for 10-30 seconds. Do 1-3 sets of 10-12 repetitions.



5 Lunge Step:

Stand with your feet together and step forward with one leg, bending your knee to 90 degrees after your foot hits the ground. *Make sure the front knee remains over the ankle and does not go past step foot.* Continue moving your body forward by bringing your back (stationary) leg forward, then together with your step leg. Alternate legs with each step. Do 2-3 sets of 10-15 repetitions.



6 Broad Jump:

Stand with your feet shoulder width apart and jump forward, landing on both feet. Focus on taking small, controlled jumps and landing with equal weight distribution on each leg. Concentrate on soft, quiet landings and maintaining your lower extremities in good alignment, with your hips over your knees, and knees over your feet. Make sure your knees do not come together when you land from this jump. Over time, this exercise can be progressed by increasing the length of the jump. This exercise should be monitored either by a partner or with a mirror.



Physical therapists are highly-educated, licensed healthcare professionals who can help patients reduce pain and improve or restore mobility—without expensive surgery or the side effects of medications. APTA represents more than 70,000 physical therapists, physical therapist assistants, and students of physical therapy nationwide. Its purpose is to improve the health and quality of life of individuals through the advancement of physical therapist practice. Learn more about conditions physical therapists can treat and find a local physical therapist at www.familyptservices.com

