

ACL tears plaguing female athletes

Risk of knee injury higher than for male counterparts

BY MIRA WASSEF
Times Herald-Record

It's not like Sara Cannillo was climbing the side of a mountain or doing 360 degree spins off her bike during the X-Games.

Cannillo, a sophomore at S.S. Seward, was simply slowly jogging upcourt during a basketball game with nobody around her and, when she slowed down, her right knee buckled and she tore her ACL.

"I was really upset," said the 5-foot-10 Cannillo, who also plays volleyball. "I was kind of mad because I really didn't do anything. I was scared I wasn't going to be able to play volleyball next year."

ACL, which technically stands for anterior cruciate ligament, could easily stand for the anatomically chauvinistic ligament.

ACL tears, which are debilitating knee injuries when the center part of the knee connecting the femur and tibia tears, have plagued women's athletics. In the past 10 to 15 years, doctors and researchers have found that females are 2 to 10 times more likely to suffer an ACL injury than their male counterparts.

"It's become apparent that females have significantly higher risk than males, and that's adjusted by how much time they spend playing sports," said Dr. Robert Marx, attending orthopedic surgeon at the Hospital for Special Surgery in New York City and professor of orthopedics at Weill Cornell Medical College. "They are less common before puberty and more common in the junior and senior year of high school."

Highland's Stephanie Byrne was playing soccer in the state tournament in November when she cut the wrong way while playing defense and tore her left ACL. Byrne, a junior who also plays basketball and had to miss this season, also went down with no contact and heard a popping and cracking sound.



"They tend to be quadricep dominant and have weak hamstrings, which also affect the knee."

DR. ROBERT MARX
Orthopedic surgeon

Byrne rehabbed for four weeks prior to surgery and now does it twice a week since the surgery in January.

"It hit me pretty hard," Byrne said. "It was tough because basketball is my favorite sport and I didn't get to play. I just want to go out there."

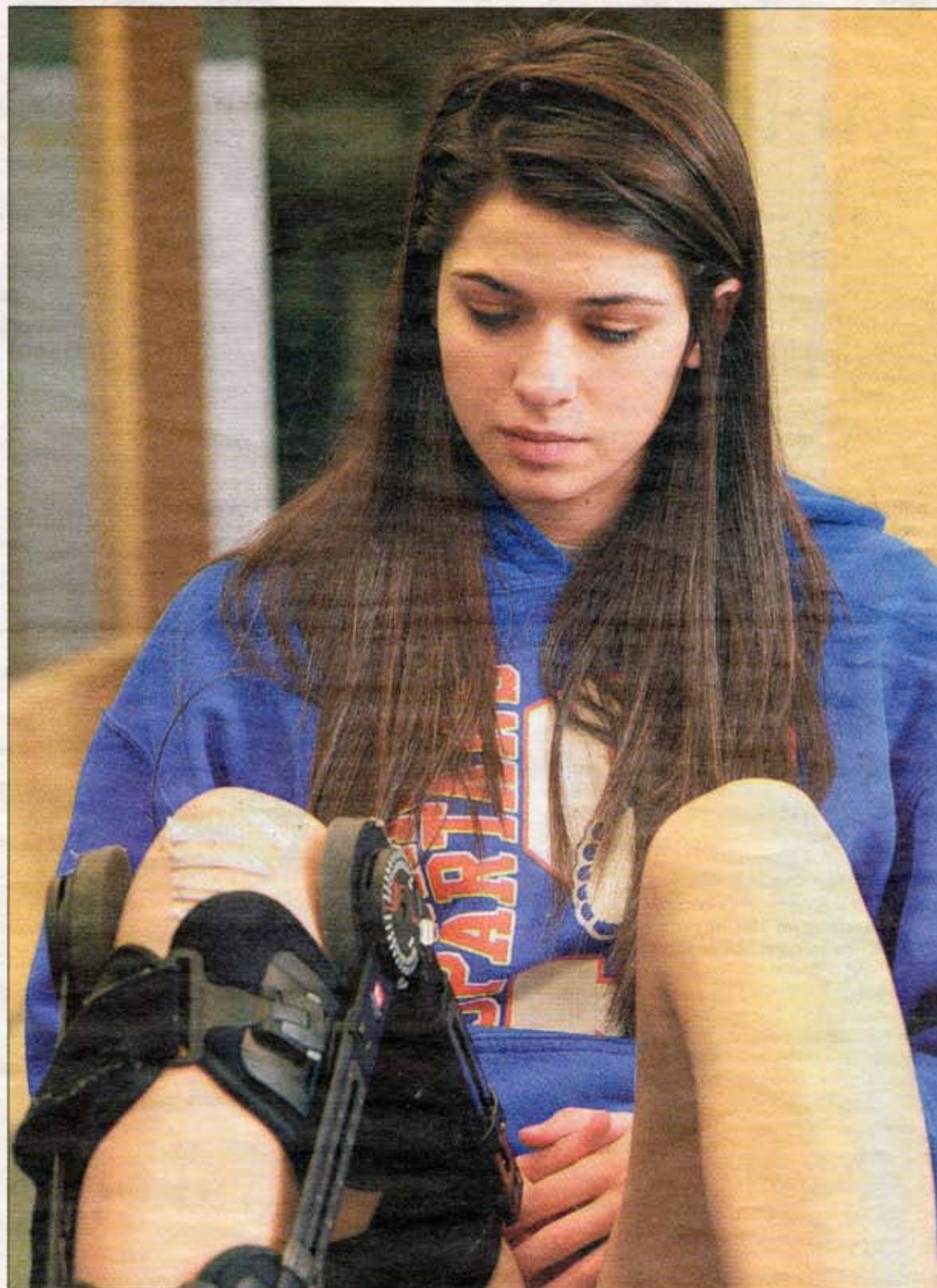
Up until puberty, ACL ruptures reportedly occur at about the same rate in males and females. At the age of 12, there is a large rise in ACL injuries in females and they peak at age 16.

Reason difficult to pinpoint

Several studies have explored different reasons for the drastic difference between male and females when it comes to the debilitating knee injury, but have yet to pinpoint just one reason.

The most common theories are that ACL tears in women can be due to anatomical structure, genetics, estrogen levels or hormones, muscle development or physical fitness.

"The short answer is we don't know why, but it's definitely a combination of things," Marx said. "A few reasons are that



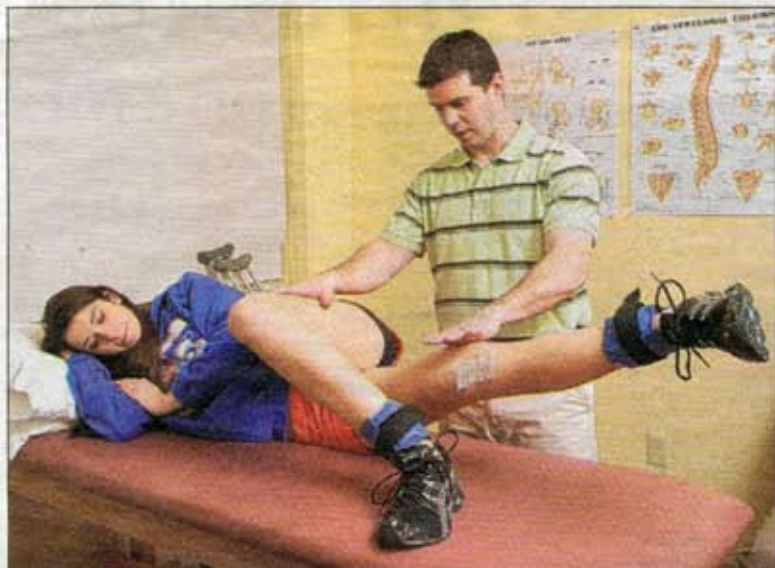
TOM BUSHEY/Times Herald-Record

S.S. Seward girls' basketball player Sara Cannillo, who is recovering from surgery to repair the anterior cruciate ligament in her right knee, rehabilitates her injury at Access Physical Therapy & Wellness in Goshen earlier this month.

girls land in more knock-kneed positions from jumps. They have weak hips that allow the knee to crumble in that knock-

knee position. They tend to be quadricep dominant and have weak hamstrings which also affect the knee."

Cannillo and Byrne are just two examples of the estimated 80 percent of ACL injuries in females that are a result of



TOM BUSHEY/Times Herald-Record

S.S. Seward girls' basketball player Sara Cannillo works with physical therapist Ray Youghans at Access Physical Therapy & Wellness in Goshen earlier this month.

non-contact. Those typically occur during change of direction, sudden deceleration, cutting movements, awkward landings or twisting, and when an athlete plants wrong.

Two-thirds of athletes usually hear a popping sound and experience swelling immediately. Soccer and basketball are the sports most common for ACL injuries in women, followed by volleyball and lacrosse.

Rehabilitating the knee

The rehabilitation process is long and arduous. After surgery, it typically takes six months to a year to fully recover, depending on the person. An average person takes nine months, Marx said.

Cannillo did rehab for two weeks pre-surgery and now does it three times a day since the surgery in January. Cannillo's exercises include knee bends and quad muscle workouts.

"It's definitely harder mentally," Cannillo said of her rehab process. "It's frustrating

because the exercises are hard and you can't do as much as you usually can."

The first step of physical therapy is to return motion to the joint and surrounding muscles, and that is followed by strengthening the new ligament. The final phase is aimed at returning the athlete to doing things specific to their sport, Marx said. Basically, the athletes are re-learning to do the menial things that once came easily, like walking and running.

Girls are also more likely than boys to reinjure the knee or injure the other knee, Marx said.

And that's exactly what happened to Sabrina Byrne, Stephanie's older sister.

Sabrina, 19, suffered two ACL injuries in 2009 when she was playing basketball at Highland. She was one of three Highland players who suffered an ACL injury that season.

Sabrina tore her left ACL in February of 2009 and the right knee in December while playing basketball.



STEVE BORLAND/ Times Herald-Record

Highland's Stephanie Byrne, shown during a basketball game last season, tore her ACL during the state soccer playoffs in November causing her to miss the basketball season this year.

"The first one I didn't know what I was getting myself into," she said. "I pushed to get back. I wish I didn't because I wasn't strong enough. I'm kind of hesi-

tant to returning to play basketball because I don't want it to happen again."

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TOM BUSHEY/Times Herald-Record

S.S. Seward girls' basketball player Sara Cannillo's knee shows signs of surgery to repair a torn ACL.

THE INJURY

When you injure your anterior cruciate ligament, you might hear a "popping" noise and you may feel your knee give out from under you. Other typical symptoms include:

- Pain with swelling. Within 24 hours, your knee will swell. If ignored, the swelling and pain may resolve on its own. However, if you attempt to return to sports, your knee will probably be unstable and you risk causing further damage to the cushioning cartilage (meniscus) of your knee.
- Loss of full range of motion
- Tenderness along the joint line
- Discomfort while walking

The anterior cruciate ligament can be injured in several ways:

- Changing direction rapidly
- Stopping suddenly
- Slowing down while running
- Landing from a jump incorrectly
- Direct contact or collision, such as a football tackle

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PREVENTING ACL INJURIES

A study performed by researchers at the Oslo Sports Trauma Research Center in Norway found that an ACL prevention strategy can cut ACL tears by 50 percent.

The best way to prevent an ACL injury is to implement and add warm-up drills like jumping and balancing. These drills will increase neuromuscular control and conditioning. In turn, muscular reactions will improve, thus decreasing the risk of an ACL injury. A warm-up program of at least 15 minutes two to three times per week is essential in order to prevent an ACL injury.

- Forward running to warm up the hip extensors and hamstrings
- One of the fundamental ways to avoid an ACL injury is to not wear shoes that have cleats in contact sports.
- When a person has already suffered an ACL injury, but wants to return to competitive sports, the best way to prevent another injury is to strengthen the quadriceps and hamstrings.
- Another way is to change mechanics like pivoting, cutting excessively because it puts

- extra stress on the knee.
- Overall, sports like football, soccer, basketball, and other contact sports the risk is always high.
- The best way is to wear a knee brace.

Stretching

Stretching the quadriceps and hamstrings before an event will also prevent ACL injury because it promotes flexibility, decreases firmness, and increases performance. The muscle stretching has to be done in repetitions.

- Calf Stretch:** 1-2 minutes of stretching the lower leg muscles. Ankle circles will stretch the gastrocnemius.
- Quadriceps:** 2-3 minutes of seated butterfly 3 reps of 20 seconds
- Hamstrings:** 1 minute of wall sits 2 reps of 30 seconds
- Inner thigh stretch:** 1 minute of knee to chest
- Hip flexors:** 2 reps of at least 20 seconds of lunges

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