

Coming back from an ACL tear:

Special Medical Services is your rehabilitation/injury prevention specialist

Bret Kruthoff calls it "the rock star of knee injuries."

"It's not the most common knee injury, but it is probably the most famous, the most widely-known because you see and hear it a lot with famous athletes," said Kruthoff, one of the doctors of physical therapy at Special Medical Services in Charles City.

He was referring to ACL tears, which involve the stabilizing ligament within the knee that connects the upper leg bone (tibia) and lower leg bone (femur).

"The function of the ACL is it keeps the bottom bone from moving out on the upper bone," explained Kruthoff. "The knee is designed to bend and flex, and this helps with its stability. If you tear your ACL, when you plant your foot, the bottom bone keeps on moving, because there is nothing to hold it in place."

"You see this injury a lot with athletes because the ACL provides the main support for cutting and twisting movements. However, it is not limited only to athletes."

Kruthoff said he has read where there are approximately 200,000 ACL injuries a year, resulting in approximately 100,000 ACL reconstructions per year.

"With males it usually results from a contact injury, whereas in females it is predominantly a non-contact injury caused by jumping or cutting and the knee buckling and giving way," he reported. "Females are 6-8 times more likely to tear their ACLs than males. They don't know for sure why that is. There are anatomical differences in the hip and knee alignment, there may be a

"About the same time, 2-3 years before, the University of Iowa had the same thing where a number of their female basketball players and volleyball players suffered a season-ending ACL injury," he said. "They started a preseason prevention program that saw some success. We teamed up with one of their therapists who came up and we put on a clinic here in Charles City. From that clinic, we further developed a prevention program and have worked with our coaches in Charles City with that — and it, at least to this point in time, appears to have significantly reduced the number of ACL injuries for the girls who participate in sports."

While not guaranteed to completely eliminate ACL injuries, the prevention program has appeared to help.

"We saw there was a problem and was something that needed to be addressed. Since it has been shown that females jump and land differently, the focus on the prevention program was to teach them to jump and land in a more correct, or ACL-safe, manner."

Generally speaking, ACL tears happen to more athletic populations. However, Kruthoff noted that tears, especially the non-contact ones, can happen in junior high, high school, college and professional sports.

"Basketball, in particular, puts a lot of stress on the knee, as does football

which also factors in the contact aspect," said Kruthoff. "Even though ACL tears are well known because of the exposure that higher profile athletes get, locally the numbers are not staggering. We will see several ACL injuries a year, but that is a small percentage when compared to all types of injuries."

He noted that ACL patients will use surgeons in Mason City, Waterloo, Mayo, Cedar Rapids or Iowa City, and Special Medical Services can work in partnership with all of them.

"Each surgeon has their own different protocols for rehabilitation and we work closely with each on following those protocols," Kruthoff said.

Reconstruction

The repair process for ACL tears is called a reconstruction.

"They found out that just sewing it back together doesn't work, it doesn't take," said Kruthoff. "So the repair process is to reconstruct an ACL ligament using other body tissues."

There are two different procedures to choose from — an autograft and an allograft.

"An autograft utilizes tissue from your own body," Kruthoff explained. "The two most common ones are they take part of the patellar tendon, then drill tunnels in the tibia and femur and run it through there. Sometimes they will take a hamstring tendon and drill the same tunnels and use anchors to hold the ACL in place."

"The other type of procedure is called an allograft, where you can take the same tendon, but from a cadaver. They can use a patellar or a hamstring, and sometimes they will use an Achilles tendon."

He said both the autograft and allograft methods have certain advantages and disadvantages.

"The autografts use your own tissue so there is no harm from rejection of the tissue by the body," said Kruthoff. "It tends to incorporate or adapt quicker, therefore long term it seems to be more stable."

"The downside is they harvest that tissue from the same knee, so you are actually causing an injury and weakening that area to strengthen another. As a result, it causes additional pain and swelling initially. The initial phase of the rehab program is a little more cumbersome and complicated, as a result. In the long term, though, it has proven to be a more stable incorporation."

As for an allograft, Kruthoff cited the benefit as being you don't have the harvest sites on the body, so the initial few months are a lot more comfortable for the patient and the rehabilitation process is easier in the beginning.

"The downside of the allograft is it is a foreign tissue to the body and sometimes the body rejects it or doesn't take it completely and over time the graft can loosen," he reported. "Usually it will take, but it takes longer to incorporate itself than the autograft. That means we can't be as aggressive with the rehab and the return to sports is later than what it would be with an autograft."

Asked why another ACL ligament isn't just used in an allograft, Kruthoff replied that "it's easier to take a tendon and stretch it than to try and find an exact ACL match from a cadaver."

"You have to understand, though,



Bret Kruthoff, DPT, ECS, ACT, RVT, RCP, shows where the ACL ligament is located in the knee

that this is a tendon being asked to perform the same function as a ligament," he continued. "They are very similar, but have a little different properties. Tendons are usually more elastic. A tendon is something that connects a muscle to a bone, while a ligament connects a bone to a bone. It tends to be a little more rigid."

"That's why we call this a reconstruction, the body has to reincorporate or remodel itself so that this relocated tendon is more like a ligament."

According to Kruthoff, most rehab programs now target trying to get an athlete back to playing in 6-9 months following an autograft. With an allograft, the return is anticipated more in the 9-12 month range.

"Sometimes it's quicker, sometimes longer, depending on the surgeon and how it all incorporates, because each person is different," he said.

Rehabilitation

For most surgeons, the rehabilitation process following an ACL reconstruction begins the next day.

"We want to get the swelling and pain down as much as possible," said Kruthoff. "We also need to reactivate the muscles around the knee, because the injury and the surgery cause those muscles to quit working. They just shut off."

"Our whole focus is getting that muscle back again."

Once the initial swelling and pain after surgery are reduced, therapists work with ACL patients to try and get range of motion back.

"To get that knee straight again is the number two goal," Kruthoff said. "The third goal is getting the muscle to work again as soon as possible."

Rehabilitation sessions are usually scheduled three times a week for first 2-4 weeks, until normal motion is restored.

"At first patients will be on crutches and wearing a brace. Our next goal is to get them walking safely without the crutches, and then without the brace," Kruthoff said. "There is a process of building up the muscles around the knee by working on strength, on body awareness and on agility."

"What makes rehabilitation so challenging is we have to monitor the type of exercises and stresses that go through the knee, because if you put too much force through a reconstruction you can stretch out that graft, or you can get to the point that the anchor sites become loose and it won't fully incorporate itself and the knee will fail."

He said professional physical therapists know through science and research what exercises they can perform at what phase in the rehabilitation process.

"For each different type of graft, the exercise will progress at different phases because different grafts incorporate into the knee at different times," Kruthoff remarked. "It all depends on the patient. That's why at SMS each patient will work with his or her own therapist throughout the process. Each rehabilitation is individualized to that patient."

Educating the patient plays a big role in that process — what to do, when to do it and more importantly, what not to do."

Research suggests that those who tear their ACLs in a non-contact fashion have a propensity to be at higher risk to injure that same knee again, as well as the other knee.

"We don't know for sure why that is," Kruthoff said. "There's something there that suggests that some people just have a higher propensity for tearing their ACLs."

The good news, he said, is that a majority of people get back to a very active, functioning lifestyle following ACL reconstruction and rehab.

Much has been made this NFL season of the return of the Minnesota Vikings' Adrian Peterson from an ACL tear last season. Just eight months removed from that injury, he appears to be performing close to the same level as before that made him a superstar.

"Adrian Peterson is quite phenomenal. I talked to one of the trainers for the Cincinnati Bengals and they said they won't let their players come back after an ACL tear for nine months minimal," Kruthoff said. "There is a process of building up the muscles around the knee by working on strength, on body awareness and on agility."

He cited former Iowa basketball All American Ronnie Lester and former Vikings Pro Bowl quarterback Dan Culpepper as two well-publicized examples.

"Research suggests that ACL reconstruction takes two years off a normal NFL career and that only 60-80 percent of pro football players get back to their prior level of function," Kruthoff said. "Today, though, you are seeing several players come back after ACL reconstruction and be just fine. The surgical techniques are better, the rehabilitation is better. It is still not perfect, but over the last 20 years it is considerably improved — how the surgeon places the graft, the anchors they use, learning about various grafts and how they incorporate within the body."

At Special Medical Services, the staff stays up to date with the latest techniques and information.

"I just went to a conference with two of the most renowned ACL surgeons — Dr. John Andrews, who all the pro players go to for Tommy John surgeries and ACL reconstructions, as well as Dr. Frank Noise. They are on the cutting edge of ACL reconstruction and rehabilitation, so we stay right with the latest trends." Kruthoff said. "As new information comes out, we also relay that to the coaches we work with to try and help prevent ACL injuries in the first place."

Should they occur, however, there is a place close to home that matches or surpasses what any other rehabilitation service around can offer. To learn more about ACL rehabilitation — and prevention — contact Special Medical Services at (641) 228-6344. SMS offer the finest in physical therapy with a staff of 14 professionals trained in not only physical therapy, but athletic training, exercise physiology, electromyography, respiratory therapy, cardio-pulmonary, rehabilitation and ultrasound vascular diagnostic service.

Special Medical Services is located at 800 11th St. in Charles City, within the Floyd County Medical Center, as well as at the Mercy Medical Center in New Hampton, 608 N. Maple St.



Charles City High School athlete Zack Mitchell works on his range of motion during rehabilitation at Special Medical Services following an ACL reconstruction.

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