



Rodeo — Not for the Faint of Heart

Sport Known for Multitude of Injuries

JODI B FARMER, AST EDITOR, WITH INFORMATION PROVIDED BY TRAVIS KIECKBUSCH, MD

When it comes to participating in rodeo, cowboys and cowgirls know that it isn't a safe sport. They know that an animal can turn at any time or that a small misstep can throw them and their animal off their game. They compete for the guts and glory, often ignoring pain and injuries as is the norm accepted throughout the sport. Not performing equals no pay day as most rodeo participants are not sponsored and prize money helps them to support their families. With prize money up for grabs, performance is necessary to this lifestyle as many contestants dedicate their time to training making a regular, full-time job out of the question.

Rodeo athletes can be difficult to take care of due to the cultural acceptance of performing through injuries, the lure of prize funds and the fact that many participants are on the go constantly, sometimes performing at multiple rodeos in a single day. Many rodeo athletes have to travel to compete so tracking athletes for follow-up care is complicated. The physicality and nature of the sport also makes it hard to treat as injuries vary and there are no predictable accidents. How a bull or bronc kicks up or lands cannot be predicted and once bucked off the animal, athletes are left scrambling to safety. There are also other safety hazards and sometimes an athlete hits his or her head on the chute gate or the ground during their performance. Rodeo injuries vary greatly ranging from minor sprains and strains to concussions, to mild to severe fractures including spinal cord injuries.

There are two main categories that make up the competition of a rodeo: rough stock events and timed events. Rough stock events include bareback riding, saddle bronc riddling and bull riding. Timed events include steer wrestling, tie down roping, team roping and barrel racing. In all of these events, there is a

LEARNING OBJECTIVES

- ▲ Identify what types of injuries are common among rodeo athletes
- ▲ Learn what challenges medical personnel have to deal with when working with rodeo contestants
- ▲ Determine what rodeo-specific injuries require surgical care
- ▲ Review the procedure for arthroscopic anterior cruciate ligament repair
- ▲ Check out just how important the Justin Sportsmedicine Team is to rodeo athletes



time element to them; athletes either need to complete a certain skill within a designated time limit or the fastest time completing that task wins the event. Some events are also judged.

As is any sport, the majority of rodeo events can cause trauma and, potentially, even death. Many rodeo athletes push their body's limit to the brink increasing the risk of injury. The most common injuries result in sprained or pulled muscles in the areas of the wrist, groin and legs. Concussions also are prominent, and just like skiing, more rodeo athletes are now choosing to wear helmets that may help should they fall. One of the biggest differences between rodeo and other sports is the weight of the competition. Animals such as bulls average around 2,000 pounds with horses weighing in more than 1,000 pounds. When one of those animals comes crashing down on a cowboy, the force that is generated by the animals weight can be debilitating to the athlete. Fortunately, most cowboys walk away with minimal injuries and thanks in part to

a recent increase in preventative work, the overall number of rodeo injuries has been reduced.⁶

Justin Sportsmedicine, a team of medical experts assembled by the Justin Boots Company, has partnered up with NASA to conduct research to reduce the amount of injuries cowboys sustain. One area of study led them to analyze head injuries and the violent motion that athlete's heads move in during bareback rides. The goal was to determine what equipment may best protect a cowboy's head during this

Animals such as bulls average around 2,000 pounds with horses weighing in more than 1,000 pounds.

activity, hence a recent surge in protective gear for the chest and head. A lot of injuries in rodeo are event specific, but the most common injury in both bull riding and bareback riding is to the spine. “Cervical or low back followed by thoracic or mid-back are the areas we treat the most. It’s a critical area and, of course, the professional athletes don’t want to end up with a spinal injury.”⁵

Other typical rodeo injuries include rib fractures, sprains to knees, shoulders, ankles, fingers and hands; penetrating chest wounds from being gorged by the animal; and finger amputations.² Most agree that having doctors present at rodeo events also cuts down on traumatic damage as doctors can immediately access an athlete’s condition. Justin Sportsmedicine sends team members all across the country to assist rodeo athletes with preventative measures as well as treatment should an injury occur.

COMMON RODEO INJURIES

Contusions and mild strains are very common injuries exhibited by rodeo athletes. Most athletes know the general treatment for such injuries and do well by administering care to the injured area. Rest, ice, compression, elevation (or RICE) is main route that doctors advise to help heal strains and sprains. As the injury begins to heal, stretching and strengthening is critical to overcoming the injury.

HEAD AND NECK

These area-specific injuries include concussions, eye injuries, facial fractures and neck injuries. Concussion symptoms can include headache, disorientation, confusion, amnesia, dizziness, incoordination and nausea. Concussions are very common in the sport of rodeo and the incident reports can be twice as high as other sports, although much like football, concussions in rodeo are underreported with only 8 to 14 percent being reported. Although animals may cause some concussions, hitting the ground after being bucked off an animal results in a higher reporting of concussions. Other incidents resulting in rodeo athlete’s concussions include: bucked off, kicked, horse’s hip, stepped/fell on, hit chute/fence, bull’s head.^{2,4}

Concussions are generally graded from mild to severe and most resolve in seven days. Also like football, more tests are being conducted after an athlete is diagnosed with a concussion to reliably decide when that athlete is able to return to play. Most experts fear that repeat injury of



this condition can result in lasting cerebral damage, and possibly death. In rodeo athletes who have experienced a concussion treatment ordered includes rest and moderate activity. It is important to explain signs of complications to affected athletes and who to contact should symptoms get worse.⁴

Eye injuries typically include lacerations to the lid, cornea and face; “tail whip;” foreign bodies that enter the eye such as dirt, rocks, etc; and detached retina. The important symptoms to monitor when there is an eye injury is sudden decrease or loss of vision; painful eye movement or entrapment; light sensitivity; diplopia; eye protrusion; flashers; pupil irregularity; red eye; hyphema; and halos around



lights.⁴ When it is determined that tail whip or a foreign body has injured the eye, an athlete needs to pay attention to any tearing or pain in the eye region and if they have a sense of the foreign body. Foreign bodies open the potential for a variety of diseases that could be contracted when the source hits the eye. Potential pathogens that can lead to infections include enterococcus casseliflavus, strep zooepidemicus, MRSA; E Coli, pseudomonas and corynebacterium pseudotuberculosis.⁴ Treatment of eye minor injuries usually includes topical antibiotics, a patch, pain control and anesthetic drops. Athletes are examined daily and on average takes about 24 to 48 hours to heal.

For lacerations from sharp objects or blunt trauma, surgical repair is most likely recommended. For retinal and optic nerve injuries, referrals are given so adequate evaluations can be assessed away from the rodeo arena. Athletes with vision loss and/or abnormal pupils are candidates for these types of injuries. Retinal detachment is another possible injury rodeo athletes may sustain. Symptoms of retinal detachment can include flashes, floaters, sparks, vision loss or a dark curtain that veils itself over

the injured eye(s). After any eye injury, a rodeo athlete is evaluated for continued loss of vision, peripheral field loss, hyphema, corneal damage, facial fractures, motility disorder or abnormal pupils.⁴

SPINE

Spinal injuries are one of the most severe injuries a rodeo athlete can sustain while participating in any of the events. From relatively minor spinal injuries including sprains and strains that are quite common in Bareback riders, to nerve injuries and fractures, this type of injury is the most unpredictable and life-threatening. A rider could instantly be paralyzed from spinal injury or, worse, death. With rough stock riders, the most common spinal injury comes from striking their back on the chute or hitting the ground. A wide range of problems presents itself when spinal fractures occur. The region of the fracture also plays a critical role in the range of complications, although many rodeo athletes walk out of the arena with spinal fractures. The most common thoracic/lumbar fractures include transverse pro-

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The Angels in the Arena

Justin Sportsmedicine Team
Provides Necessary Care
to Rodeo Athletes

Crystal Rae Coddington, CSFA



Crystal Rae Coddington rides during a rodeo

Most people think of rodeo as an individual sport, but the Justin Sportsmedicine Team is hard at work, many times for hours before and after each rodeo performance. Since 1981, the Justin Boot Company has funded a program that has provided free medical treatment to athletes and rodeo personnel at more than 11,000 rodeo performances. A core team, comprised of physicians, athletic trainers, chiropractors, nurses and other medical professionals, has donated more than 28 million dollars in care to rodeo athletes.

The Justin Sportsmedicine Team is a jewel in the crown of rodeo. Of the 580 rodeos sanctioned by the Professional Rodeo Cowboys Association, the Justin Team travels to 125 for a total of 380 rodeo performances and travels more than 160,000 miles annually. A staff of 12 paid employees and countless volunteer medical personnel provide services to athletes, at sometimes in remote locations throughout the United States and Canada.

Cowboys and cowgirls alike receive a wide range of care including massage, chiropractic services, ice, hydration, support joint taping, use of braces during competition, coordination of surgical referrals, emergency care and, periodically, digital X-rays. In addition to providing care, the team also educates rodeo athletes about stretching, rehabilitation and maintaining their physical and mental stature while traveling. The medical staff not only treats typical sprains and strains for rodeo contestants, but also educates the athletes, their parents and their coaches on the many other injuries that are associated with the rodeo. PowerPoint presentations and a database of research articles are available as a resource from the Justin Team as they strive to teach and inform athletes about the sometimes dangerous and traumatic sport these athletes dedicate their life to.

Three custom Bloomer brand trailers that sit at 40 feet in length enable the medical team to provide the majority of care onsite, feet from the rodeo arena. In the event that a contestant requires treatment while still in the arena, staff can evaluate and administer care immediately. Whenever possible, the team works alongside local physicians to ensure emergency care is provided appropriately with the available resources. The Professional Rodeo Cowboys Association provides every contestant health insurance coverage with their membership, a valuable benefit since many rodeo athletes would not otherwise have health insurance.

It is no secret that rodeo competitors often compete while injured. There are no salaries in rodeo; therefore, many cowboys provide for their families by getting in the arena and winning money. Even contract personnel, such as rodeo clowns and stock contractors, have to work before they're considered "healed." Cory Wall has been named one of the best in the business by his peers when he won the Bullfighter of the Year award in 2009. He has been saving cowboys lives for more than 20 years and attributes much of his career success and longevity to the Justin Sportsmedicine Team. "I tore my meniscus in Fort Worth with 22 performances left. Dr J Pat Evans and Bill Zeigler drained my knee every day and kept me going through the whole rodeo."

The Justin Sportsmedicine Team provides top-notch care and cowboys seek them out, even if they are just competing at a small rodeo in the vicinity of the Justin Team. John Growney, of Red Bluff, California, a stock contractor and former rough stock rider, is very appreciative of the Justin Team. "Having the Justin Team at a rodeo is as important to a contestant as having money added to the pot."

Mike Rich, the executive director of the Justin program, has stated that the Justin Sportsmedicine Program strives to provide the most updated medical care as medicine and technology continually evolve. An Electronic Medical Records system provides a tracking system so that a contestant who is treated in Cheyenne, Wyoming, on Friday can be monitored on Saturday in Salinas, California, and later by a primary care physician or surgeon. Additionally, research is under way in conjunction with manufacturers of both helmets and riding vests as the rodeo industry continues to look at ways to make their athletes safe. Specialists and manufacturers are focusing on using technology from products previously catered to sports such as car racing and transferring their benefits into the rodeo arena.

The Justin Team excels in the background during all the excitement of the rodeo. The next time you attend a rodeo or watching one on TV, look for the angels in the arena – they'll be wearing vests that read Justin Sportsmedicine.

Crystal Rae Coddington, CSFA, has been assisting in surgery since 2009 and scrubbing for 10 years prior to that. When not working in surgery, she is a correspondent for the Cowboy Lifestyle Network and travels to various events around the country. She enjoys riding and showing horses with her family in Scottsdale, Arizona.



James Heilman, MD
Traumatic Lisfranc fracture with fractures of the 2nd to 4th distal metatarsals



James Heilman, MD
A traumatic dislocation of the tibiotalar joint of the ankle with distal fibular fracture

cess fractures and compression/burst fractures. Cervical fractures are also common and can present challenges as how to administer care. Jumped facets, spinous process fractures and cervical body fractures are the most identifiable. Nerve injuries also occur in rodeo athletes and acute injuries are usually associated with fractures.⁴

UPPER EXTREMITIES

Upper extremity injuries cover a lot of different injuries and can vary from athlete depending on the position the athlete was in when the injury occurred. Fractures, dislocations, sprain and strains and nerve injuries are common in upper extremity with the hands, wrists, elbows and arms being the most affected. Any rodeo athlete can experience an upper extremity injury with rough stock riders at the forefront of this category due to the violent nature

of the animal's movement. Dislocations in the shoulder and elbow are common and many athletes return to the arena shortly after having such dislocations reduced. Some examples of upper extremity injuries include ulnar fractures, scaphoid fractures and carpal ligament injuries/Forearm fractures are prevalent in bareback riders as all the force goes through a single limb.⁴

These injuries are treated more aggressively so the athletes can return quickly to the activity. Depending on the injury, an athlete's injury may be stabilized, wrapped and taped so the athlete can continue competing that day.

LOWER EXTREMITIES

Sprains and strains, dislocations, fractures, pubalgia and ligament injuries make up lower extremity injuries. Most injuries in this category are sustained in the athlete's foot,

ankle and leg. These types of injuries can be seen common throughout all rodeo events. Hip dislocations, knee dislocations and tears are very common in bull and bronc riding as well as calf ropers and steer wrestlers. When an athlete severely dislocates a hip or knee, the ability to compete is reduced greatly as most times the best solution is to stay off the limb and elevate. If ligaments are torn, that may further reduce the quick recovery time. Injuries such as Frank Joint dislocation may need to be reduced as soon as possible, and a qualified medical personnel can perform this onsite so that the athlete may try to return to the arena.⁴

ACL and PCL injuries are also common in rodeo athletes and the severity of the injury can vary greatly from a strained ligament or muscle to a tear requiring surgery. ACL injuries are in common in calf ropers and steer wrestlers as there is a high angular force of deceleration when they step off their horse. PCL injuries are common in saddle bronc and bareback riders as they can land or fall on a flexed, bent knee. PCL injuries generally will bruise, but stabilize and rarely require surgery.

Pubalgia, also known as a sportman's hernia, is common as rodeo athlete's body's twist, turn and forced into positions that aren't natural during their events. This type of injury is generally isolated to bareback riders and often is difficult for the athlete to pinpoint the exact location as muscles throughout the adductor region are affected. Diagnosis of pubalgia requires skillful differentiation and a pubic examination to determine exactly where the injury has occurred. Many tears can happen that leads to intense groin pain and could be in any of the following areas: external oblique aponeurosis; conjoint tendon; pubic tubercle; inguinal ligament; fascia transversalis; rectus abdominis muscle; abdominal internal oblique muscle; ilioinguinal nerve; genitofemoral nerve. It's even possible that tears occur simultaneously in several different areas.¹

There's a saying in rodeo that reads "If you're gonna rodeo, you're gonna get hurt." It's a sportwide acceptance and most cowboys and cowgirls will experience some type of injury during their rodeo career. Instead of trying to change the mindset of rodeo athletes about the seriousness of the sport, the focus needs to be on preventative care including education so that fewer accident and injuries occur. As technology continues to improve and more studies are performed, more athletes will possess a more in-depth knowledge of the safeties of the sport and what they can do to protect themselves and they ride, buck and rope to their way to guts and glory stardom.

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Anterior Cruciate Ligament Repair

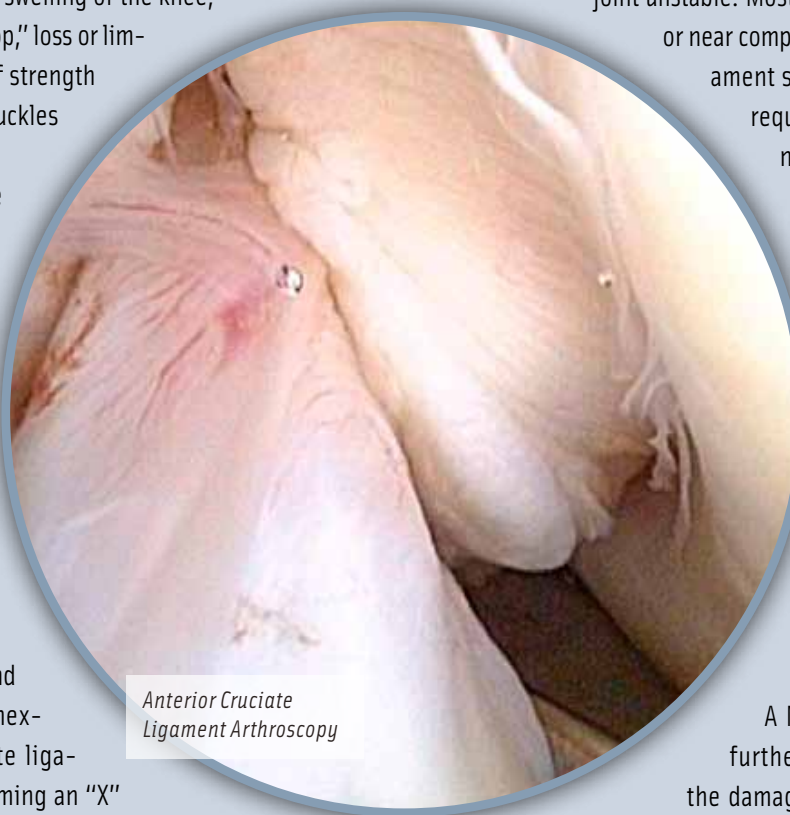
JODI B FARMER, AST EDITOR

One of the most common knee injuries affecting all athletes is a sprain or tear(s) to the anterior cruciate ligament. Rodeo athletes are prone to ACL injuries because of the weight of the animals and the force that weight creates on the athlete's body as well as the motions endured during the different events. Symptoms of a torn ACL are easy to identify and will most likely present themselves instantly following such an injury. Symptoms include swelling of the knee, pain, hearing or feeling a "pop," loss or limited range of motion, loss of strength and knee that gives out or buckles when pressure is applied.³

Ligaments connect the bones of one's body and act like ropes as they move and adjustment to our body's ever-changing motion. Collateral ligaments are found the sides of the knees and cruciate ligaments run inside the knee. Collateral ligaments of one's knee control the side-to-side motion helps the knee and one's body brace against unexpected movements. Cruciate ligaments cross each other, forming an "X" underneath one's knee cap, with the anterior cruciate ligament in front and the posterior cruciate ligament in back. These ligaments control the back and forth motion of one's knee. The anterior cruciate ligament runs diagonally across the middle of the knee and its main function is to prevent the tibia from sliding out in front of the femur. It also provides rotational stability to the knee.¹

GRADING ON A SCALE

Sprains for the ligaments are graded on a severity scale, with Grade 1 being mild and slightly stretched. Ligaments classified in a Grade 1 sprain can still keep the knee joint stable. Grade 2 stretches the ligament so that it is loose and is often classified as a partial tear. Grade 3 is labeled as a complete tear of the ligament and has been split into at least two sections, making the knee joint unstable. Most ACL injuries are complete or near complete tears. For Grade 3 ligament sprains, surgery is usually required. Since a torn ACL will not heal without surgery, most doctors will advise on rebuilding the ligament with an ACL operation. ACL tears cannot be stitched back together so to restore one's knee stability, the ligament actually has to be reconstructed.¹



Anterior Cruciate Ligament Arthroscopy

FURTHER EXAMINATION

A MRI may be called for to further examine the extent of the damage. A popular test to help determine whether there has been a tear in one's ACL is the Lachman test. In a Lachman test, the affected knee will be placed 15 degrees of flexion and slight external rotation to relax the iliotibial band. The surgeon will then place his or her hand on the medial side of the patient's calf while the surgeon uses his or her left hand to grab the lateral section of the thigh. The lower leg is pulled in the anterior direction while

the upper part of the leg is pulled posteriorly. By performing these actions, the surgeons can determine if a tear has occurred and the size of the tear and location of the displacement.²

Once it is determined that surgery is necessary, arrangements are made for replacing the injured ligament with an autograft, synthetic ligament or allograft. Autografts are most frequently used and include either the patellar tendon graft, iliotibial band or semitendinosus tendon.²

INSTRUMENTATION AND EQUIPMENT

- Orthopedic instrument set
- Knee arthroscopic instruments
- Video equipment
- ACL guide system
- Bone tunnel plugs
- Fixation device such as bone screws, staples, spiked washers
- Power drill
- Microsagittal saw
- Tourniquet

An examination will be performed under anesthesia before skin prep and draping are performed. The diagnosis will be confirmed with a diagnostic arthroscopy. Any preliminary procedures such as a meniscal tear will also be performed prior to ACL repair.

PROCEDURE

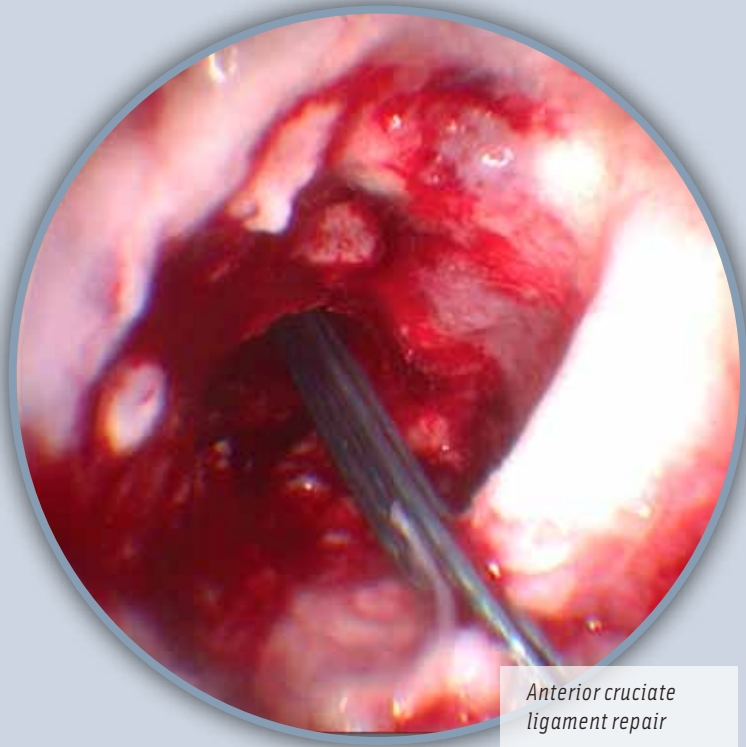
Once the operation is under way, the remaining portion of the ACL is debrided using a full-radius resector attached to the arthroscopic shaver. A notchplasty may need to be performed and the surgeon uses a 4.5-mm arthroplasty bur, osteotome and rasp to widen the anterior portion of the intercondylar notch. Approximately 3–5 mm of bone is removed to prevent impingement on the ACL graft.² Surgeon's preference determines the graft selection as does patient's preference and availability. There are two types of grafts: an autograft – a graft taken from the patient's own tissue; or an allograft – a graft taken from a cadaver. The surgeon makes a small

incision on the distal lateral portion of the femur downward to the lateral aspect of the femoral condyle. The guide pin is inserted at the femoral site after the aiming device has been positioned. The pin is inserted into the posterior and superior area of the intercondylar notch. A second incision is made, medial to the tibial tubercle below the knee. The aiming device is positioned and another guide pin is inserted, this time on the anterior tibial incision into the intercondylar notch, medial to the ACL attachment to the tibia. Number 1 or 2 sutures are used to replace the pins and then the surgeon confirms the measurements of the aiming device.²

Different tendons may be harvested for a graft and procedures for harvest and preparation vary depending on location. *For detailed descriptions of harvest, please refer to Surgical Technology for the Surgical Technologist, page 868.*

Femoral and tibial tunnels will be created to ensure the proper placement of the graft. The lateral condyle is exposed in the second incision and the Hohmann retractors is used to protect the soft tissues and the vastus lateralis. An angled curette is used to create the opening point of the tunnel and a guide pin is inserted and drilled with the cannula to create a 10-mm tunnel. The tibial tunnel is created in similar fashion and then the tunnels are smoothed using a curette or abraded.²

Prior to placing the graft, the ends of the graft are marked with a skin marker to ensure the correct placement upon insertion. The smaller of bone plugs is inserted into the tunnel so that the cortical side of the proximal bone plug is facing posteriorly. A Schmitt clamp is passed up the tibial tunnel to grab the stay sutures. The clamp then will pull the stay sutures out of tibial tunnel and help in passing the graft. The bone plug placements are confirmed and then both ends of the graft are fixed with either staples, bone screws with spiked washers, interference screws or bioabsorbable screws. The graft is fixed as the knee remains in 20–30 degrees of flexion. Under an arthroscopic exam, the surgeon confirms there is no impingement of the graft while the knee is in full extension.²



*Anterior cruciate
ligament repair*

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WOUND CLOSURE

Prior to wound closure, the joint is thoroughly irrigated. The surgical technologist should have collected as many of the bone chips as possible so that the surgeon may place the chips in the defect caused by the harvesting to aid healing. A bone tamp may be used to keep the chips in place. A surgeon may also decide to not repair the tendon at all, or repair the tendon with a 0 Vicryl. Either way, the paratenon must be repaired before the wound is closed and dressed in a bulky dressing.²

POST-OP

A knee brace is usually placed on the affected leg to help recovery although this factor is determined between the patient and their doctor. The patient will need to stay off the affected leg for as many as eight weeks and will need to use crutches or a can depending on the severity of the injury and need for recovery time. A rehab schedule will be initiated that will use a combination of range-of-motion exercises, straight leg raises, TENS unity, toe raises and minisquats. By two weeks postoperative, the patient

should be able to obtain 0 degrees of extension ; by four weeks post-op, he or she should be able to reach 90 degrees of flexion.²

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