

Management of ACL Injuries: Clinical Practice Guideline from the AAOS

Key Points for Practice

- The presence of a popping sensation in combination with swelling is a significant predictor of an ACL injury.
- Magnetic resonance imaging has a high sensitivity and specificity for confirming an ACL injury.
- If reconstructive surgery is indicated, it should be performed within the five months following injury.
- Early accelerated (19 weeks) and non-accelerated (32 weeks) rehabilitation programs may be beneficial after ACL reconstruction.

From the AFP Editors

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A collection of Practice Guidelines published in *AFP* is available at <http://www.aafp.org/afp/practguide>.

Anterior cruciate ligament (ACL) injuries, which are usually related to sports, have an incidence of approximately 252,000 yearly, with women two to eight times more likely to have an ACL injury vs. men. Persons who experience ACL injuries have an increased risk of arthritis. The American Academy of Orthopaedic Surgeons (AAOS) has provided guidance in determining the best options for treating an ACL injury.

Recommendations

BASED ON STRONG EVIDENCE

Diagnosis. Because of their effectiveness in diagnosing ACL injuries, a history (e.g., mechanism of injury, presence of a popping sensation, locking, or catching; weight-bearing ability; ability to return to play; previous knee injuries; area of pain) should be obtained and musculoskeletal examination of the lower extremities (e.g., distal perfusion and tibial/peroneal nerve function; joint line tenderness or obvious step-off/deformity; effusion; varus and valgus laxity at 0 and 30 degrees of extension; anteroposterior and rotational laxity) should be performed. The presence of a popping sensation in combination with swelling is a significant predictor of an ACL injury, as are positive findings on the Lachman test.

Magnetic resonance imaging has a high sensitivity and specificity for confirming

an ACL injury. It also can help determine if other conditions are present, such as a meniscal injury; however, the sensitivity and specificity for this use are lower.

Treatment. Physicians performing ACL reconstruction should use autograft or allograft tissue that is processed correctly. Studies have found that the clinical outcomes are similar between the two; however, how the allograft is prepared (e.g., procurement, processing, storage, implantation) may cause some differences.

Physicians should use bone-patellar tendon-bone or hamstring-tendon autografts, and should use a single- or double-bundle approach when performing intra-articular ACL reconstruction. Results of stability testing, patient satisfaction, knee function scores, and rates of failure have been shown to be similar between these two types of grafts, and there is no statistically significant difference in outcomes, including postoperative pain and knee function scores, between the single- and double-bundle approaches. It should be noted that the rate of postoperative pain while kneeling has been shown to be greater in persons receiving the bone-patellar tendon-bone graft.

BASED ON MODERATE EVIDENCE

Prevention. Neuromuscular training programs may reduce or prevent ACL injuries, with several studies supporting this training; one analysis suggests 109 athletes would need to participate to prevent one injury.

Treatment. Surgery can be appropriate in persons with an ACL tear who are 18 to 35 years of age and active, because it has been shown to decrease pathologic laxity, instances of instability, and additional injuries. Reconstructive surgery should be performed in the five months following injury; this is to protect the articular cartilage and ►

menisci. Performing reconstruction within three to five months vs. after three to five months has been shown to improve stability, allow a higher level of activity and greater function, and reduce meniscus tears.

When performing an intra-articular ACL reconstruction, a tibial independent or trans-tibial technique can be used for femoral tunnel placement; there appear to be no consistent differences between the techniques with regard to objective metrics, results reported by patients, or knee function scores. Because of the lack of evidence of benefit regarding function or laxity, routinely using functional knee braces (e.g., neoprene brace) after ACL reconstruction is not recommended.

Early accelerated (19 weeks) and non-accelerated (32 weeks) rehabilitation programs may be beneficial after ACL reconstruction, with studies showing that, two years after undergoing reconstruction, patients in both types of programs had similar outcomes (e.g., knee laxity, satisfaction, level of activity, function).

BASED ON LIMITED EVIDENCE

Prevention. Physicians may not recommend knee bracing as a preventive measure for ACL injuries, because risk of injury does not appear to be lower when bracing is used. Two studies of low and moderate strength found that the rate of injury was not reduced in football players at high school and college levels.

Treatment. Limited evidence supports that rather than providing nonsurgical management, physicians may opt to perform reconstruction because it decreases pathologic knee laxity. If a patient has a meniscus tear in addition to an ACL injury, physicians may repair the meniscus when performing reconstruction.

Despite limited evidence, physicians may still perform ACL reconstruction in persons who are skeletally immature, because

it appears to provide significant benefit vs. nonsurgical management with regard to stability, function, and activity.

Evidence is limited to support nonsurgical treatment for persons who are less active and have less laxity, or performing reconstruction of an ACL tear combined with treating medial collateral ligament tears without surgery. Additionally, having to reach a particular functional milestone or waiting a certain amount of time after injury or surgery before returning to play or activity is not recommended.

BASED ON CONSENSUS OPINION

Diagnosis. When first assessing persons with a knee injury, anteroposterior and lateral knee radiography should be performed to determine if there are possible injuries that may necessitate emergency care (e.g., fracture, dislocation, neoplasm, foreign body); making a diagnosis early in these cases can be beneficial in reducing morbidity. However, if magnetic resonance imaging or computed tomography is an imaging option, other radiography may not be needed.

Treatment. Immediate treatment is recommended in persons with a torn ACL and a locked knee from a displaced meniscus tear, which can lead to fixed flexion contracture. Promptly unlocking the knee can help prevent this from occurring. If the meniscus is reduced earlier, then the tear may be more easily repaired.

Guideline source: American Academy of Orthopaedic Surgeons

Evidence rating system used? Yes

Literature search described? Yes

Guideline developed by participants without relevant financial ties to industry? No

Available at: <http://www.aaos.org/research/guidelines/ACLG Guideline.asp>

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