

Spring 2018

## ACL Conservative Rehab vs. Surgical Reconstruction

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### Recommended Citation

Galtis, Logan and Stetson, Joshua, "ACL Conservative Rehab vs. Surgical Reconstruction" (2018).  
*Thinking Matters Symposium Archive*. 153.

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## Abstract

If you have ever been around sports you've probably heard of the ACL or anterior cruciate ligament. The ACL, responsible for preventing anterior displacement on the tibia, usually tears from non-contact pivoting motions. There are two options for an athlete with a full ACL tear, either to undergo reconstructive surgery of the ligament which will put the athlete out for months or look to conservative rehab by strengthening the muscles surrounding the knee in order to compensate for the integrity lost with the torn ACL. Deciding which route to go is the tricky part. Physicians may start with conservative treatment as it yields quicker return to play. Theoretically if an athlete can make up for their lack of ligament stability with muscular strength regarding the quads and hamstrings, then there is no need for surgery. However studies have shown that due to the ACL's role in proprioception, athletes with ACL deficient knees show decreased reflexes in the hamstrings as well as diminished stability of the knee regardless of conservative treatment when compared to an uninjured knee. Meaning surgical reconstruction may restore lost stability. Another study also indicated higher risk of osteoarthritis in knees with full tears of the ACL that didn't pursue reconstruction but in cases of reconstruction the risk was reduced.

## Introduction

ACL injuries are the most common injury. Between 100,00 and 200,000 full ACL tears per year in the US. This kind of injury can be career ending and deciding what course of action to take can often be difficult. There are pros and cons to both surgery and conservative rehab, however most of the general public may have no clue to these. Knowing the pros and cons is critical when deciding your course of action. This is what we sought to bring to light.

## Clinical Question

When should someone pursue conservative ACL rehab versus when should they pursue ACL reconstruction surgery.

	Mean	SD	95% confidence interval
ACL-deficiency (ms)	98.8	31.5	87.1 to 110.5
Control side latency (ms)	52.7	19.2	45.6 to 59.9
Latency differential (ms)	46.4	29.3	35.5 to 57.3*
laxity differential (mm)	3.3	2.6	2.3 to 4.3
Lysholm score	65.1	18.4	58.2 to 72.0

Figure 1- Chart showing time in MS that it took for both deficient knees and normal to see a reflex contraction of the hamstrings on each respective side

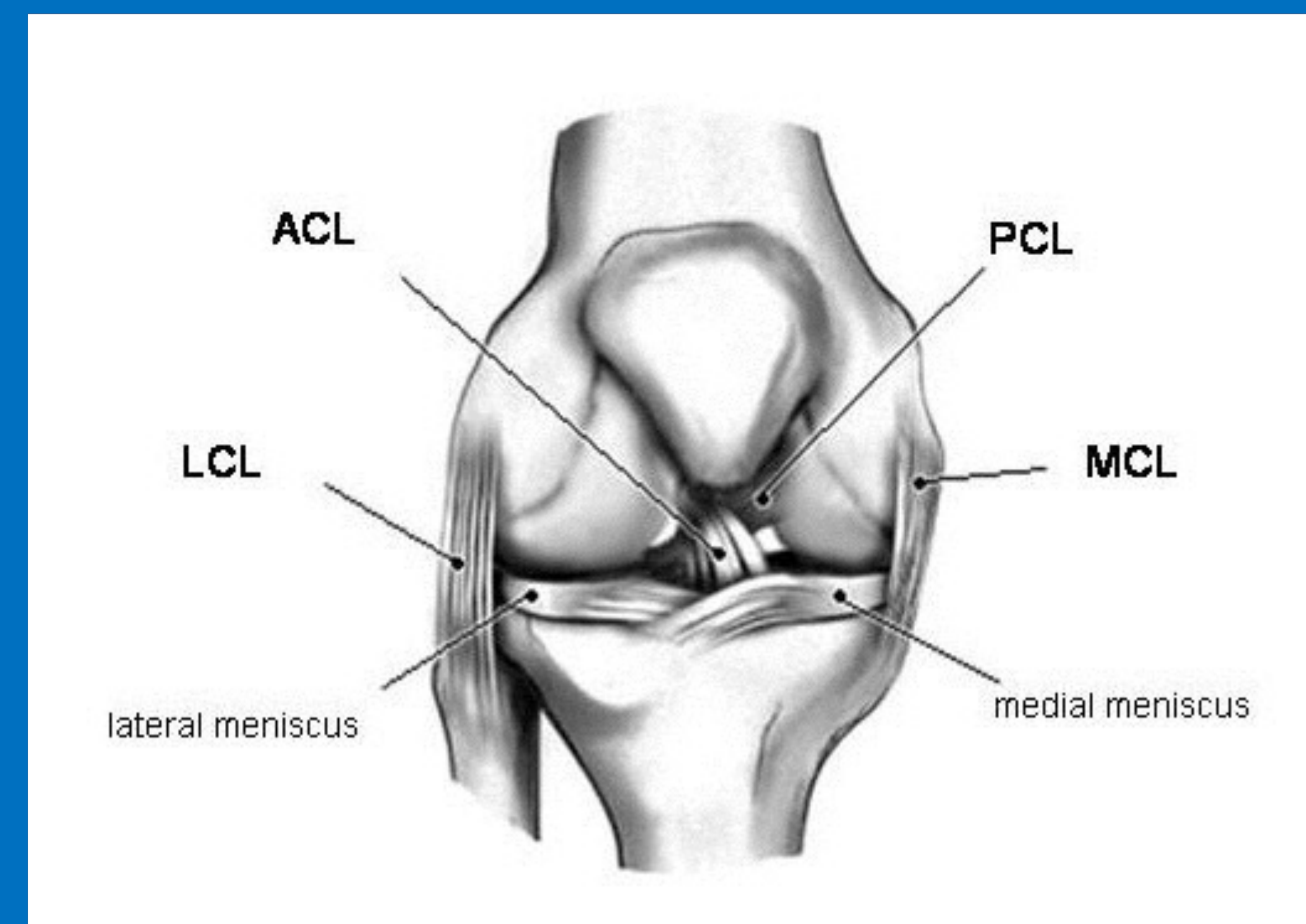


Figure 2. Ligaments and menisci of the knee

## Methods

- Hamstring Reflex Testing
- Knee Proprioception
- Long term observation of ACL reconstruction patients
  - additional surgeries, deficits, and dysfunction following initial repair
- Surgical reconstruction and its role in preventing ACL injury related OA
- Time frame on return to play (6 months - 1 year)
- Youth vs. Older population in regards to reconstruction

## Results

The literature indicates there is a case for both surgical and conservative rehabilitation. Athletes wishing to return to sport should undergo surgery because of the stability and proprioception provided by the ACL. Shown in Figure 1 an ACL deficient knee takes almost double the time to respond to stimulus than that of a healthy knee. One study compared surgical repair and conservative treatment in regards to stability and incidence of developing OA. 60 of 102 subjects under went surgery and ultimately had increased stability, however 42% of those subjects developed OA. Compared to the conservative treatment group of 42 subjects, only 25% developed OA but there was reduced amounts of stability. Notably, of those who developed OA, those opting for surgery experienced milder symptoms.

## Next Steps

Deciding whether to pursue conservative treatment or surgical repair can be hard. However due to the ACL's extreme role in knee stability, it is almost impossible to forego surgical reconstruction and regain normal stability and no secondary injury from the deficiency. Although the hamstring can play a role in preventing anterior translation of the tibia just like the ACL, the reflex time is too great to be an alternative to an intact ACL. Likewise, when the knee is flexed or the hip extended, the hamstrings ability to prevent anterior translation is greatly reduced due to shortening and the resulting lack of tension. In conclusion, athletes seeking to return to sport should undergo surgery gain stability and reduce risk of further knee injury. Non-athletic populations may want to undergo conservative treatment to reduce the risk of developing OA, although the severity of the OA must also be taken into consideration.

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