

## ACL injuries: unanswered questions – are there any solutions?

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In their article published in this journal, Swärd and co-workers [10] discuss the risk factors for an ACL injury after injury to the contra-lateral knee. It is previously known that the risk is higher for injury to the contra-lateral knee after injury to one knee. The reasons are not very well known, but all what is known is discussed in the above-mentioned article. The authors found that there is evidence that shows the risk of sustaining a contra-lateral injury is greater than the risk of a first-time ACL injury. This increased risk should be born in mind when athletes return to sports activities after first-time ACL injury, especially high-level activity. The authors did not find conclusive evidence in terms of risk factors, like female gender, family history of such injury and a narrow intercondylar notch. More likely are changes in biomechanics, i.e. altered kinematics and neuromuscular factors [1, 10].

This article helps us to focus on how to solve the unanswered questions concerning ACL injuries. The answers might not be easy, but an attempt might be as follows. First and foremost, *prevention* is a key factor [3–5, 8, 9]. Recent studies have focused on preventive measures and some researchers claim that approximately 50%, i.e. every other ACL injury can be prevented (<http://www.ostrc.no>). Some even claim higher number, up to 80%. This means that preventive measures must be implemented in normal sports training on every day basis. This is often not easy, as coaches will focus primarily on sports training and not prevention. The problem is that prevention takes time, and it must be a normal part of the every day training. Risk factors must be evaluated and judged on an individual level. One

such risk factor is ACL injury to the contra-lateral knee. Due to the risk of permanent disability, for instance the development of osteoarthritis in the medium-term, coaches and physicians involved in sports medicine/traumatology should evaluate every such injury in order to prevent another ACL injury [3, 4, 8, 10].

The second solution might be the *timing* of surgery, when and if surgery is needed [2, 5–7, 9]. Early reconstruction, before additional injuries to the menisci and cartilage is to be preferred. Early ACL reconstruction, i.e. restoration of the ligament before chronic/recurrent pivoting leads to better restoration of kinematics, i.e. normalization of the rotational movement between tibia and femur. In the long run, normal kinematics might reduce the risk of the development of osteoarthritis in the medium- to long-term.

The third solution is concerned with the *surgical technique* [5–7, 9]. A little more than 20 years ago, ACL reconstructive surgery was revolutionized; when ACL reconstructions were converted from wide open to arthroscopic. This was a major step forward, but time has shown that it was not enough. All knees are not alike and ACL reconstructions cannot be standardized. The same surgery cannot be done on all knees. This has led to increased understanding of individualized surgery. Several surgeons perform double-bundle techniques today. But, double-bundle is technically demanding and might sometimes not be indicated, for instance in patients with small knees. The term anatomic ACL reconstruction has also been popularized, even though it is still not well defined what is meant by anatomic. But, the knowledge and understanding is rapidly increasing. We must remember though that double-bundle ACL reconstruction is not necessarily the same as anatomic ACL reconstruction. What anatomic stands for is as exact restitution of the native ACL as possible. This

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means that several items must be considered, like the use of an accessory medial portal, visualization of the tibial and femoral insertions sites, as well as bony ridges on the femur. Placement of tunnels in the native footprints is of greatest importance. Most important is, however, the individualization of the surgery. In other words, all knees are different, no knees are exactly alike [2, 5–7, 9].

Three different solutions; *prevention, timing and surgical technique*. If we—knee surgeons—follow these steps carefully, we are most probably heading along the right track. Much more work is needed; but new and well conducted studies and new techniques will bring us forward. But in order to be able to answer the remaining questions and come up with sound solutions, we need studies with large cohorts, robust study designs, power calculations and accurate measurement methods. Good science will give our athletes fewer injuries and better surgery.

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