

Return to sports after anterior cruciate ligament injury: neither surgery nor rehabilitation alone guarantees success-it is much more complicated

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Thomee, R., Waldén, M., Hägglund, M., (2015), Return to sports after anterior cruciate ligament injury: neither surgery nor rehabilitation alone guarantees success-it is much more complicated in BRITISH JOURNAL OF SPORTS MEDICINE, vol 49, issue 22, pp 1422-1422, *British Journal of Sports Medicine*, 49(22), 1422-1422. <https://doi.org/10.1136/bjsports-2015-094793>

Original publication available at:

<https://doi.org/10.1136/bjsports-2015-094793>

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Return to sports after ACL injury: Neither surgery nor rehabilitation alone guarantee success – it is much more complicated!

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Complex factors influence the likelihood of ACL injured athletes to return to sports. For example, a systematic review from 2014 (1), found weak evidence that higher quadriceps strength, less effusion, less pain, greater tibial rotation, higher Marx Activity score, higher athletic confidence, higher preoperative knee self-efficacy, lower kinesiophobia and higher preoperative self-motivation were associated with returning to sport after ACL reconstruction. Another recent systematic review (2), found that hopping performance, younger age, male gender, participation in elite sport, and having a positive psychological response favoured returning to the pre-injury level of sport. Similarly, a systematic review (3) of level II and III studies found that the following factors contributed to better functional outcomes after ACL reconstruction; male gender, age less than 30 years, reconstruction within three months, and high baseline activity level. Outcome after rehabilitation was negatively affected by smoking, high body mass index, low quadriceps strength, and range-of-motion deficits. No evidence was found for preoperative anterior laxity to influence rehabilitation.(3) It is, however, still somewhat unclear if and in what way these factors influence the athlete's ability and/or decision to return to sport, and it is likely that many factors interact in a complex manner. There are thus many questions to be answered regarding what characterizes athletes who successfully will be able to return to sports, as well as those who will not, after ACL injury in terms of physiological, psychological, sociological and other factors.

What do we mean by return to sport?

It is also necessary to define in more detail what is meant by *return to sports*.⁽⁴⁾ The return should be *safe* and *successful* meaning no re-injury or other subsequent injury, and no exacerbations of knee pain and swelling, in the short term as well as no negative long term consequences as osteoarthritis. When (weeks, months, years) can a re-injury occur in order for us to say that the return was safe and successful? Likewise, the type and level of sport has to be specified when we discuss return to sports. Is it elite, competitive, or recreational level of sport? Is it return to pre-injury sport at the same or lower level or to another sport? Is it return to contact, cutting and pivoting sports? Various aspects of performance when returning to sports, e.g. athlete-perceived level of performance or match statistics, may also be considered.

Furthermore, there are still many questions to be answered on who will benefit from surgery and who will not. An RCT comparing outcomes after early ACL reconstruction + rehabilitation with rehabilitation alone could not demonstrate differences between groups in terms of symptoms, function in sports, knee related quality of life and muscle function one to five years after injury.^(5, 6) Still, many would argue that ACL reconstruction is the only option for an athlete desiring to return to pivoting sports at a high level. Unquestionably, there is a need for more comprehensive studies evaluating athletes' ability to return to sports without surgery after ACL injury, as well as the short and long-term outcomes.

Are larger web-based studies the key?

We are convinced that much larger study populations, longer follow-up times, larger and more comprehensive batteries of validated evaluation methods are needed to properly investigate the complex factors that influence the ability to return to sports after ACL injury. Batteries should include physiological, psychological and socio-economic factors as well as data on rehabilitation details, compliance and return to sports. "Small" studies with "few" evaluation methods will just not do the job! Web-based online registry studies seem to be the future in order to collect and manage the vast volume of data, and, possibly, we will see such data added to our knee ligament registries in the future?

Until further evidence is found regarding if, when and how to successfully and safely return to sports after an ACL injury it seems necessary that surgery and rehabilitation has to be individualized. Given

that treatment volumes influence outcome of similar medical procedures (7), we speculate that services provided by clinically and scientifically experienced surgeons and physiotherapists at specialised ACL treatment clinics may provide the best chance of success. The onus is on these centres to provide outcome data.

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