

# PREDICTORS OF COMPLICATIONS AFTER ANTERIOR CRUCIATE LIGAMENT INJURY

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## AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet, kommer att offentlig försvaras i sal Arvid Carlsson, Medicinaregatan 3, torsdag den 30 april 2015 kl. 09:00

## FAKULTETSOPPONENT

Professor Lars Engebretsen  
Institutt for klinisk medisin  
Det medisinske fakultet  
Universitetet i Oslo, Norge

## AVHANDLINGEN BASERAS PÅ FÖLJANDE DELARBETEN

- I. Andersson D, Samuelsson K, Karlsson J  
Treatment of anterior cruciate ligament injuries with special reference to surgical technique and rehabilitation: an assessment of randomized controlled trials  
*Arthroscopy. 2009;25(6):653-685*
- II. Samuelsson K, Andersson D, Karlsson J  
Treatment of anterior cruciate ligament injuries with special reference to graft type and surgical technique: an assessment of randomized controlled trials  
*Arthroscopy. 2009;25(10):1139-1174*
- III. Andernord D, Karlsson J, Musahl V, Bhandari M, Fu FH, Samuelsson K  
Timing of surgery of the anterior cruciate ligament  
*Arthroscopy. 2013;29(11):1863-1871*
- IV. Andernord D, Björnsson H, Petzold M, Eriksson BI, Forssblad M, Karlsson J, Samuelsson K  
Surgical predictors of early revision surgery after anterior cruciate ligament reconstruction: results from the Swedish national knee ligament register on 13,102 patients  
*The American Journal of Sports Medicine. 2014;42(7):1574-1582*
- V. Andernord D, Desai N, Björnsson H, Ylander M, Karlsson J, Samuelsson K  
Patient predictors of early revision surgery after anterior cruciate ligament reconstruction: a cohort study of 16,930 patients with 2-year follow-up  
*The American Journal of Sports Medicine. 2015;43(1):121-127*
- VI. Andernord D, Desai N, Björnsson H, Gillén S, Karlsson J, Samuelsson K  
Predictors of contralateral anterior cruciate ligament reconstruction: a cohort study of 9061 patients with 5-year follow-up  
*The American Journal of Sports Medicine. 2015;43(2):295-302*



UNIVERSITY OF GOTHENBURG

Göteborg 2015

# PREDICTORS OF COMPLICATIONS AFTER ANTERIOR CRUCIATE LIGAMENT INJURY

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## ABSTRACT

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**BACKGROUND:** An anterior cruciate ligament (ACL) tear is a serious knee injury that frequently affects young individuals active in soccer, alpine skiing, handball and basketball. Regardless of treatment, an ACL injury is associated with an increased risk of complications in the short and long term, such as meniscal and chondral injuries or a need to undergo surgery on the injured knee or the contralateral knee. In order to prevent these complications, the essential first step is to obtain knowledge of factors that make certain individuals susceptible to certain complications.

**AIM:** The aim of this thesis was to investigate patient- and health care-related factors and identify predictors of meniscal injury, chondral injury, revision surgery and contralateral ACL reconstruction.

**METHODS:** This thesis is based on six studies. Studies I-III are systematic reviews of randomized controlled trials and cohort studies. Studies IV-VI are registry-based cohort studies of patients in the Swedish National Knee Ligament Register.

**RESULTS:** Individuals with an ACL injury who underwent non-surgical treatment ran a more than 10 times higher risk of sustaining meniscal injuries and an at least 4 times higher risk of requiring meniscal surgery compared with individuals who underwent ACL reconstruction. Adolescents (individuals aged 13 to 19 years) who underwent ACL reconstruction ran a 2 to 3 times higher risk of revision surgery or contralateral ACL reconstruction. Adolescents who suffered an ACL injury while playing soccer ran a 3 times higher risk of revision surgery. Females who underwent ACL reconstruction with harvest of a contralateral hamstring tendon autograft ran a more than 3 times higher risk of future contralateral ACL reconstruction.

**CONCLUSIONS:** Non-surgical treatment, age 13 to 19 years, injury during soccer and contralateral hamstring tendon harvest were predictors of serious complications after ACL injury.

**KEYWORDS:** *Sports medicine, evidence-based medicine, knee, joint, menisci, cartilage, osteoarthritis, arthroscopy, physical therapy, rehabilitation, sex, adolescent, teenager, football*

ISBN: 978-91-628-9296-8 (print)

ISBN: 978-91-628-9297-5 (e-pub)



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Gothenburg 2015