

# Knee ligament injuries in male professional football players

## Akademisk avhandling

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Hörsal aulan, R-huset, Sahlgrenska Universitetssjukhuset/Mölnadal, fredagen 15: November 2019, klockan 09.00

av **Matilda Lundblad** leg. läkare

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## Avhandlingen baseras på följande delarbeten

- I. The UEFA injury study: 11-year data concerning 346 MCL injuries and time to return to play.  
Lundblad M, Waldén M, Magnusson H, Karlsson J, Ekstrand J.  
*British Journal of Sports Medicine*. 2013 47(12):759-62.
- II. Medial collateral ligament injuries of the knee in men's professional football players: a prospective three-season study of 130 cases from the UEFA Elite Club Injury Study.  
Lundblad M, Häggglund M, Thomeé C, Hamrin Senorski E, Ekstrand J, Karlsson J, Waldén M  
*Knee Surgery Sports Traumatology Arthroscopy*. 2019 doi: 10.1007/s00167-019-05491-6.
- III. No association between return to play after injury and increased rate of anterior cruciate ligament injury in men's professional soccer.  
Lundblad M, Waldén M, Häggglund M, Ekstrand J, Thomeé C, Karlsson J.  
*Orthopaedic Journal of Sports Medicine*. 2016 27;4(10):2325967116669708.
- IV. Epidemiological data on LCL and PCL injuries over 17 football seasons in men's professional football: the UEFA Elite Club Injury Study.  
Lundblad M, Häggglund M, Thomeé C, Hamrin Senorski E, Ekstrand J, Karlsson J, Waldén M.  
*Manuscript*.

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## **Abstract**

Knee ligament injuries are common in professional football and entail a significant time loss from football, but studies of knee ligament injuries other than anterior cruciate ligament (ACL) injuries are scarce.

The aim of this thesis was prospectively to study the epidemiology and characteristics of medial collateral ligament (MCL), lateral collateral ligament (LCL) and posterior cruciate ligament (PCL) injuries in male professional football players. A further aim was to analyse whether professional football players are more susceptible to ACL injury after returning to play from any previous injury.

The main sample in this thesis is from the UEFA Elite Club Injury Study (Studies I-IV) that has been ongoing since 2001. In addition, data from the English Premier League (Studies II-IV) and the Nordic Football Injury Audit (Study III) were used during 2011 and 2014 and 2010 and 2011 respectively.

Training and match exposure and time loss injuries were documented on an individual basis. Injury severity was evaluated according to length of time loss. Injury rate and the rate ratio (RR) for injury between training and matches were calculated. In Study II, further details on clinical grading, imaging findings and specific treatments were collected for MCL injuries. In Study III, first-time complete ACL injuries were matched 1:1 with control players who did not have a current injury and the 90-day period prior to the ACL injury was analysed for injuries and compared by using the odds ratio (OR) and a 95% confidence interval (CI).

The match injury rates were significantly higher than the training injury rates for MCL, LCL and PCL injuries. There was a significant average annual decrease for MCL injuries of 6.9% in Study I and for LCL injuries of 3.5% in Study IV. The majority of MCL and LCL injuries caused a lay-off time less than four weeks (71.7%, and 72.7%, respectively). Most PCL injuries (57.1%) caused a lay-off more than four weeks'. In total, 75% (98/130) of all MCL injuries in Study II and 58% (63/108) of all LCL injuries and 54% (14/26) of all PCL injuries in Study IV were related to contact injury mechanisms. For MCL injuries, the agreement between clinical examination and magnetic resonance imaging (MRI) for grading was 92% in Study II. Using a brace in grade II MCL injuries was associated with a significantly longer lay-off compared with not using a brace 41.5 (SD 13.2) vs. 31.5 (SD 20.3) days, in Study II. The odds of a player with an ACL injury sustaining an injury in the previous 90-day period did not differ significantly from that of controls.

A men's professional team can expect approximately two MCL injuries a season and one LCL injury every third season, while a PCL injury can be expected every 17th season. These knee ligament injuries typically occur during matches and are associated with a contact injury mechanism. Moreover, the collateral ligament injury rates have decreased significantly since 2001. For players sustaining a grade II MCL injury, using a brace was associated with a longer lay-off period compared with players who did not use a brace, indicating that routine bracing may not be an optimal therapeutic option and is better determined individually.

**Keywords:** Knee, ligament, MCL, LCL, ACL, PCL, professional football.