



Editorial

Anterior cruciate ligament injuries in female football. What is the current reality?



In the last years the increase in anterior cruciate ligament (ACL) injuries in women's sports and even more in young athletes is a worrying issue.^{1,2} Those of us who live the day-to-day in women's football are concerned about the increase of these injuries in this specific population. There are several medical meetings, congresses, conferences, forums... in which this is the main topic but we miss knowing the reality from an epidemiological point of view because everything is reduced to impressions, personal opinions and sensations.

In the Medical Department of Futbol Club Barcelona we began to do an epidemiological analysis to know the reality about this injury in our football teams. Including the current one there are already 14 seasons of study, enough to affirm that more than an impression the increase of these injuries in women's football and especially in youth players is a fact.

Our injury incidence (number of injuries per 1000 hours of exposure) is 0.23 in women's football and 0.05 in men, which represents an incidence 4.6 times higher in female football. If we separate our players in two groups, professional players and youth players (football academy) and compare between gender, the differences show a 1.9 higher incidence in women's professional football (0.15 vs. 0.08) and up to 7 times higher in youth female players (0.28 vs. 0.04). This increase is even more worrying when we analyse injuries by age groups inasmuch as we observe that from a total of 41 injuries collected in female players in the whole period of the study, 26 (63%) affect players between 15 and 18 years old, with one injury in a girl who was only 13 years old and another in a 14-year-old player, while in male's categories this peak is not observed. This age group is especially vulnerable to this injury and already in 2008, the International Olympic Committee, in its consensus document for ACL injuries in female athletes,³ highlighted a peak incidence in this same age group and in the last meeting of the Women's Elite Club Injury Study (WECIS) of UEFA held in Leverkusen (05 June 2024) the age group 16-18 years was also the most affected (unpublished data).

Eighty-five percent of our injuries occur due to a "non-direct contact" mechanism, that is also in line with recent publications.^{4,5} Seventeen injuries (42%) are isolated ACL tears, and the rest has associated injuries: meniscal injuries (15 with lateral meniscus tears, 6 with medial meniscus tears and 2 with both meniscus lesions) which complicates the prognosis of the ACL injury, knowing the long-term consequences in the joint health not only for the ligamentous injury but also for the meniscal and chondral involvement that often accompanies them.

While in men's football, ACL injuries remain more or less stable throughout the seasons, in women we observe a gradual increase, especially in the last 9 seasons, going from 2 ACL injuries per season in 2016-2017 to 5 injuries in 2022-2023 and 2023-2024.

In the last years there has been enough evidence to support the reconstruction of the injured ACL in paediatric populations with techniques that preserve the growth plate without the risk of causing a growth arrest.⁶ A strong association between the delay of surgery and the occurrence of meniscus and cartilage lesions has been reported, suggesting that an uncontrolled non-operative treatment may be detrimental to the intra-articular soft tissue structures.⁷ In addition is important to consider the almost mandatory establishment of a lateral extra-articular tenodesis, especially in these young patients.⁸ The success rate of athletes returning to competition after ACL reconstruction has been reported to range between 50 to 95%.⁹ However, the risk of a second ACL injury (graft rupture or a contralateral ACL tear) is known to be up to 30% in female athletes and even more in young athletes.¹⁰ That's the reason why, as a Medical Department of Futbol Club Barcelona, we consider mandatory to delay the return to competition for no less than 12 months in youth players and in any case before 9 months in professional female players.^{11,12}

The previous discussion can be perfectly applicable to any sport with similar characteristics such as basketball or handball. These worrying data push the professionals responsible for the athlete's health. The early detection of modifiable risk factors and the assessment of the risk-benefit of the exposure time of athletes at such a young age, the implementation of injury prevention programs within the content of a training session are necessary, and an adequate education for athletes, parents, coaches and club board members, about this injury.¹³ An extremely important challenge is presented to health professionals in sports that we have the obligation to continue studying to shed light on a problem of truly important magnitude.

Javier Yanguas Leyes*

Priscilla Jarrín Jácome

Women's Football Medical Staff, Futbol Club Barcelona Medical Department

*Corresponding author.

E-mail address: Xavier.yanguas@fcbarcelona.cat (J.Y. Leyes).

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References

1. Montalvo AM, Schneider DK, Silva PL, et al. 1 'What's my risk of sustaining an ACL injury while playing football (soccer)? A systematic review with meta-analysis. *Br J Sports Med.* 2019;53(21):1333-1340.

2. Beck NA, Lawrence JT, Nordin JD, DeFor TA, Tompkins M. ACL Tears in School-Aged Children and Adolescents Over 20 Years. *Pediatrics*. 2017;139(3). <https://doi.org/10.1542/peds.2016-1877>.
3. Renstrom P, Ljungqvist A, Arendt E, et al. Non-contact ACL injuries in female athletes: An International Olympic Committee current concepts statement. *Br J Sports Med*. 2008;42(6):394–412.
4. Lucarno S, Zago M, Buckthorpe M, et al. Systematic Video Analysis of Anterior Cruciate Ligament Injuries in Professional Female Soccer Players. *Am J Sports Med*. 2021;49(7):1794–1802.
5. Achenbach L, Bloch H, Klein C, et al. Four distinct patterns of anterior cruciate ligament injury in women's professional football (soccer): a systematic video analysis of 37 match injuries. *Br J Sports Med*. 2024;58(13):709–716.
6. Cancino B, Muñoz C, Tuca MJ, Birrer E, Sepúlveda M. Anterior cruciate ligament rupture in skeletally immature patients. *JAAOS: Global Research and Reviews*. 2022;6(5):e21.00166. <https://doi.org/10.5435/JAAOSGlobal-D-21-00166>.
7. Seil R, Cucchi D, Ninulescu C, Dor J, Mouton C. Anatomic anterior cruciate ligament reconstruction for adolescent patients with open physis. *Ann Joint*. 2019;4:3. <https://doi.org/10.21037/aoj.2019.06.02>.
8. Guarino A, Farinelli L, Iacono V, et al. Lateral extra-articular tenodesis and anterior cruciate ligament reconstruction in young patients: clinical results and return to sport. *Orthoped Rev*. 2022;14(5). <https://doi.org/10.52965/001c.33696>.
9. Kay J, Memon M, Marx RG, Peterson D, Simunovic N, Ayeni OR. Over 90 % of children and adolescents return to sport after anterior cruciate ligament reconstruction: a systematic review and meta-analysis. *Knee Surg Sports Traumatol Arthrosc*. 2018;26(4):1019–1036.
10. Webster KE. Return to sport and reinjury rates in elite female athletes after anterior cruciate ligament rupture. *Sports Med*. 2021;51(4):653–660.
11. Grindem H, Snyder-Mackler L, Moksnes H, Engebretsen L, Risberg MA. Simple decision rules can reduce reinjury risk by 84% after ACL reconstruction: the Delaware-Oslo ACL cohort study. *Br J Sports Med*. 2016;50(13):804–808.
12. Ardern CL, Ekås G, Grindem H, et al. 2018 International Olympic Committee consensus statement on prevention, diagnosis and management of paediatric anterior cruciate ligament (ACL) injuries. *Knee Surg Sports Traumatol Arthrosc*. 2018;26(4):989–1010.
13. Sparagana PR, Selee B, Ellis Jr HB, et al. Parental awareness and attitudes towards ACL injury prevention programs in youth athletes. *J POSNA*. 2023;5(4):788. <https://doi.org/10.55275/JPOSNA-2023-788>.