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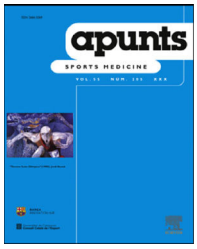

EDITORIAL

Prevention of non-contact anterior cruciate ligament injuries in female athletes. Let us make it easy

The anterior cruciate ligament of the knee (ACL) is the most injured ligament in the knee, especially in sports that involves pivot and change of direction (COD) movements. Specifically, in these sports, a higher incidence of ACL injuries has been reported on female athletes,[1] being non-contact injuries more frequent.[2,3]

The dynamic valgus of the knee on jump landing is an important mechanism to consider for non-contact ACL injuries and is considered a key risk factor in these types of injuries. There are differences between the performance of this movement between men and women, since women have a greater knee valgus at the moment of landing.[4] This could explain the higher incidence of non-contact ACL injuries in female athletes.[5] In previous studies, increased valgus of knee has been associated with deficiencies in strength or activation timing of the gluteus medius,[6,7] as well as decreased gluteus maximus activation in women during the landing phase.[8] This relationship between the lack of strength and activation of the gluteus medius and maximus with the increased knee valgus in female athletes leads us to think about a clinical efficacy in the prevention of spontaneous ACL injuries in female athletes.

However, when the results found in the studies are to be applied, we face an important limitation: most of the studies use assessments that are difficult to apply in the clinical practise and in sports in which slow motion cameras, force platforms and surface electromyography are mainly used. Having this material is an important investment and most clinics, sports centers or teams do not have it, which results in not being able to carry out a preventive approach in athletes. This fact is especially important in amateur sports, in which the resources available are limited and the risk of injury is even greater due to the low volume of training and the lack of well-designed injury prevention programmes.

For this reason, in my opinion, it is paramount to tackle this issue from a more simplistic perspective: first, facilitating the application of the results of studies in clinical practise and in sports; second, developing simple assessments available to all professionals; and, finally, designing simple exercise protocols that could be used in all sport levels, especially in amateur sport.

First aim: easy functional assessments close to all the professionals

In order to reduce the incidence of ACL injuries in female athletes, the results of previous studies must be considered and a way to develop easy functional assessments has to be found. Simple gluteus medius and maximus strength tests could be a goal for future applications in the field of injury prevention. To make the performance of these tests easy, a simple dynamometer, reachable to everyone, could be used. However, there are not enough studies providing evidence to claim that it is as a reliable tool. Performing the Star Excursion Balance Test (SEBT) to determine the presence of asymmetries between low extremities could also be useful since a high activation of the gluteus medius is observed in order to stabilize the pelvis.[9] However, more studies are needed in order to evaluate the association between the activity of gluteus medius and the knee valgus during the performance of this test.

Second aim: simple ACL injury prevention programs

The benefits of preventive programs in non-contact ACL injuries have been shown in several studies,[10] and should be part of the regular season of all athletes, with special focus on female athletes.[11,12] However, there is no clear consensus on the exercises that a prevention program should include.

The incidence of ACL injuries in dancers is lower than in soccer and basketball, while exhibiting increased gluteus maximus activation.[13] Concretely in this sport, jumping and landings are an essential part of both training and competition. With the aim of designing simple ACL injury prevention

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programs, we should focus on this type of exercise, although the sport we are doing does not reproduce jumping movements. Jumping and landing are complex movements involving less control of knee valgus and, therefore, presenting high activation of gluteus medius and maximus. Plyometrics and motor control during landings could be a useful target to minimize the risk of ACL injuries.

In my opinion, health professionals and specifically those related to sport, should focus on injury prevention, particularly those injuries that involve important consequences, both physically and psychologically in athletes of all levels. This unsuccessfully pursued goal involves making everything simpler, getting tools within the reach of all professionals and, thus, being able to minimize these injuries at all sports levels. Let us make it easy.

Conflict of interest

None.

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