A closer look at what causes ACL injury in American football

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Video Abstract

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Abstract

Tears of the anterior cruciate ligament, or ACL, are a common knee injury in American football. They also require a lengthy treatment process that includes surgical reconstruction followed by 9 to 12 months of recovery. Despite their significance, however, the circumstances that most often lead to these injuries aren't clear. To identify these contributing factors, a US-based research team has retrospectively reviewed what players were doing and how their bodies were positioned when their ligaments tore. Surprisingly, although football is a collision sport, their study shows that ACL tears aren't usually a contact injury. The team reached this conclusion by looking at ACL injuries occurring over three consecutive National Football League seasons. To accomplish this, they compiled live video footage from 148 events. Then, two orthopedic surgeons specializing in sports medicine reviewed the videos to determine what activity a player was engaged in at the time of injury, whether the injury arose from a contact or non-contact mechanism, and how the affected leg was positioned when the tear happened. The results showed that most injuries weren't caused by direct contact to the leg. Instead, lateral movement like pivoting or cutting – particularly when pursuing an opponent in the field or running with the ball – was the most common athletic activity at the time of injury. For most players, the affected leg was also in what can be described as a position of risk when the tear happened, with the hip flexed and abducted, the knee in early flexion, and the foot abducted and externally rotated. These findings held true for nearly all player positions, except for offensive linemen. For them, most ACL injuries were the result of direct contact. This discrepancy makes sense, as these athletes are often locked up while blocking an opponent and another athlete falls or rolls onto them. Although there were some limitations to the study – some videos weren't perfectly angled for looking at knee position, for example – the results clearly identified common mechanisms of ACL injury in NFL players. Understanding how and why these injuries happen may just lead to injury prevention programs that could help keep players in the game.