

Common Injuries in Kicking Sports

This research summary briefly explains some common injuries prevalent in kicking sports and ways to help prevent them. Over two decades of research has come together to identify the most common injuries in the AFL¹. The three most common injuries were hamstring, groin and ankle injuries. These were also the top three for recurrence. When looking at the missed matches per club, the data indicated that hamstring, groin and anterior cruciate ligament injuries contributed the most. These four injuries will be looked at in more detail.

Hamstring Strains

Hamstrings are a group of muscles at the back of the thigh responsible for bending the knee and extending the hip. There are at least two distinctive types of hamstring strains. The most common is type 1, caused by using the muscle when heavily loading the muscle and tendon, most commonly in high speed activities such as sprinting. This type will cause sudden pain and weakness. The less common type 2 is typically caused by over stretching the tendon with the knee straight and the hip flexed. This type of injury has less immediate symptoms and will only have a relatively small decrease in strength and range of motion³.

Continual implementation of strength training is the most effective known strategy for preventing hamstring strains. Conversely, those at highest risk have significantly weaker hamstrings⁴. When strength training to prevent hamstring strains, contraction intensity must be high and eccentric (slowing muscle lengthening) overload is important to stimulate change and adaptation in the hamstrings. Detraining happens within two weeks of stopping exercises, so loading must be done *at least* weekly. The most recently researched exercise showing great promise is the Nordic hamstring exercise shown in figure 1. Some studies have shown decrease rate of hamstring injury in some populations by more than 70% with the program shown in table one⁵. Another study showed promising results when their intervention focussed on training in a fatigued state using drills which included bending forward and high intensity running⁶.

If the injury is painful with walking 1 day following the injury, the player is 4 times more likely to require >3 weeks rehabilitation³. Initial, gentle exercises with little to no pain are recommended. After the first 48 hours, the recovery should focus on gradually increasing load, speed and complexity of activity with the goal being return to the complex environment of the field.

Nordic Hamstring Exercise Protocol			
week	Frequency per week	Number of sets per training	Repetitions per set
1	1	2	5
2	2	2	6
3	2	3	6
4	2	3	6, 7, 8
5	2	3	8, 9, 10
6 onwards (maintenance)	2	3	10, 9, 8

Table 1⁵



Figure 1: Nordic Hamstring Exercise – try to slowly lower your body to the ground.⁵

Groin Injuries

There are 4 common areas in which symptoms of groin pain arise, although 44% of the time groin pain has multiple causes⁷. Kicking sports have the highest documented rate of groin pain and of these, overuse injuries were most common³. The overuse injuries are caused by overload over time and often present with a gradual increase in vague symptoms around the groin and hip, often at a time where training or playing time has increased suddenly. Initially, overuse groin injuries can often be ignored by players which can result in lack of adequate management and continuance into a long-term injury. Overuse groin pain can come from multiple sources which has made research into the area quite difficult. Acute groin injuries, like hamstring strains, are associated with a single event which overloads the muscle or tendon.

Once again, a continual strength program and management of the player's workload is the most effective strategy to reduce the risk of injury. A decrease in hip adduction (squeezing legs together) often precedes the presence of groin pain and may be a useful predictor so that prevention strategies can be given a greater focus in training³. A recently developed exercise for developing strength in the adductors is the Copenhagen Adduction exercise (Figure 2). This exercise is like the Nordic Hamstring exercise in theory and it's believed that future research will indicate the Copenhagen Adduction exercise will show similar effects to the Nordics¹⁰. Similarly, the same progressive protocol found in table 1 would be a good guide for a progression of the Copenhagen Adduction exercise. As the groin is a complex part of the body with a large amount of force being transmitted, it is also beneficial to include strengthening for adjacent areas. Abdominal strengthening, back strengthening, balance and coordination training should be done in prevention and treatment programs⁹.



Figure 2 - http://bodybalancephysiotherapy.ie/groin_adductor_strengthening/

Prevention strategies should also include load management as spikes in training load can significantly increase the risk of injury. A moderate ongoing training load with weekly load changes of less than 15% are recommended¹¹.

Ankle Sprains

Ankle sprains occur when the foot is forced into a position where the muscles and ligaments are not strong enough to withstand the load. The most common is when the ankle rolls in and the ligaments on the outside of the ankle are injured.

A tailored balance program can be effective in the prevention of ankle sprains. A program consisting of as little as three 5-minute sessions per week has seen decreases in the rate of ankle injury¹². Single leg exercises, using unstable surfaces such as balance boards, jumping and landing practice and adding passing to include a distraction during these exercises are all important components of an effective prevention strategy.

Ankle sprains are graded as either one, two or three, with grade three being the worst. The time taken to recover and the rate of increasing the load on the ankle will be dependent on the severity. A treatment

Ankle sprains are graded as either one, two or three, with grade three being the worst. The time taken to recover and the rate of increasing the load on the ankle will be dependent on the severity. A treatment program will start with gentle movement of the ankle when it is comfortable to do so. Then, progressive strengthening exercises are included with a return to straight line running on flat ground when tolerated. Inclusion of balance exercises should be included as early as tolerable and progression to uneven surfaces and normal training and playing should be gradual. During this time, taping or bracing can be an effective strategy to minimise the risk of injury but should only be used as an adjunct to rehabilitation¹³.

Anterior Cruciate Ligament (ACL) Tears

The ACL is loaded when the lower half of the knee moves forward, rotates and bends outward. A combination of any of these three movements, with enough force, can lead to an ACL injury¹⁴. Seventy to eighty-five percent of all ACL injuries are non-contact and either due to landing, pivoting or decelerating suddenly³. Due to the structure of the ACL and the high loading associated with its injury, most ACL injuries result in a complete rupture of the tendon.

Important factors to consider when assessing the risk of ACL injury include: postural stability, abnormal mechanics during landing from a jump and increased forward/backward movement of one knee in comparison to the other. Females are between 2.4 to 9.7 times³ increased risk of ACL tear, especially in teenagers, therefore prevention strategies in young females is even more important.

The most effective strategies for preventing ACL injuries include comprehensive protocols that incorporate plyometric, strength and balance exercises¹⁶. An effective ACL prevention program should include: jumping and hopping in multiple directions, trunk strengthening, balancing on unstable surfaces, hopping and landing, single leg squats and exercises that include being pushed by a partner¹⁷. Higher level balance and control can also include jumping exercises where a partner pushes the player while they are in the air; this can also be done with eyes closed or landing on one leg.

ACL injuries are regularly, but not always, managed surgically. An orthopaedic consult is an essential part of the decision-making process. Rehabilitation and training are a significant part of any recovery after an ACL tear, regardless of whether it is initially managed with surgery. Delay of return to sport after ACL reconstruction to later than 9 months can reduce the rate of re-injury by 51%¹⁵. Other studies suggest that criteria-based approaches focussing on achieving even hopping performances are more imperative. Regardless, ACL rehab should always be closely monitored by a health professional.

Prevention programs, especially those including unaccustomed strength training, are suggested to begin in pre-season training so that adaptation can commence prior to an increase in training load during the season. Focussed attention to the areas above during pre-season and during the season has the potential to significantly reduce injury rates and increase time spent on the field.

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