

Hamstring Injury

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Latest Research on Risk Factors for Hamstring Strain

Hamstring injuries account for the most number of games missed in Australian football. Despite efforts to reduce the incidence of these injuries, they are more prevalent in professional sports now than previously. It is speculated this may be due to greater training loads and increased game scheduling in many sports, such as AFL, rugby league & union, and European soccer

Most hamstring strain injuries affect the long head of biceps femoris (LHOB), with less frequent injuries to the short head, and to the medial semitendinosus or semimembranosus muscles. Biceps tears are also slower to heal than medial hamstring strains. Mechanically, LHOB acts more as a hip extensor than knee flexor, as opposed to semitendinosus which is predominately a knee flexor. The theory behind LHOB tears is that they occur at the terminal swing phase of sprinting, when the muscle is exposed to high (eccentric or lengthening) stress, particularly across the hip.

A recent literature review identified a number of important risk factors for HS injury:

1. An increase in the volume of high speed running greatly increases the risk of sustaining a hamstring injury. This may be the major reason for the spike in early season injuries.
2. Lack of (eccentric) muscle strength. Traditionally, the greatest risk factors for HS injury were thought to be increasing age and previous injury. However more recent evidence suggests these factors may be mitigated by ensuring the HS has adequate

strength.

3. Morphological studies have shown that a short fascicle length within muscle fibres predisposes to increased risk. Fortunately, fascicle length is modifiable with targeted exercise.
4. Subjects who had a relatively greater contribution of LHOB to knee flexion during sprinting were more likely to sustain a HS injury over the following 1 to 2 seasons. There is also evidence that improving the strength of semitendinosus (the main knee flexor) helps to protect against LHOB injury – possibly by reducing its contribution to knee flexion.
5. Core stability factors have been found to affect vulnerability to HS injury. A study in soccer players found that reduced trunk and gluteal muscle activation during sprinting increased the risk of injury. An increase in anterior pelvic tilting during sprinting (placing the hamstrings at increased functional length) was also found to increase the risk. This may be caused by reduced abdominal muscle control during the hip extension phase of gait.

Reference: McNally, T (2017). Understanding acute hamstring injuries. *Sports Physio*, 4, 11-13.

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