What are the indicators for hamstring injury?

Hamstring injuries are common within both sporting and non sporting populations and result in many missed hours of training practice and missed games. My next few posts to the site will look at the main indicators of hamstring injury and follow on with how to manage such injuries when they occur.

(lollylegs.com)

Hamstring injuries account for lost time in both the training and competiitve field thus we want to do everything possible to prevent these injuries occuring in the first place. We know generally that the major precursors for any injury are athlete age and previous injury. As therapists and trainers these are unable to be altered. We can not influence what injuires an athlete has had previously or make an athlete any younger. Thus it is important that we focus on aspects of training we can control.

Several reasons can predetermine injury. The list below is by no means exhaustive but are the main indicators that I have found to contribute to such injuries.

- **Lack of hamstring strength**
- **Lack of hamstring mobility**
- **Hamstring dominant movement pattern**

In a study by Gabbe et al (2004) increasing age and decreased quadriceps flexibility were identified as significant independent predictors of the time to sustaining a hamstring injury. Older age (>23 years) was associated with an increased risk of hamstring injury (RR 3.8; 95% confidence interval (CI) 1.1 to 14.0; p = 0.044). On the other hand players with increased quadriceps flexibility (as measured by the modified Thomas test) were less likely to sustain a hamstring injury (RR 0.3; 95% CI 0.1 to 0.8; p = 0.022). To read this article click here.

As mentioned previously, athlete age is an external factor we are unable to control. Deceased flexibility however, is something we can control. It is interesting that decreased quad length is a precursor for hamstring injury. In the study by Gabbe et al (2004) quadriceps flexibility was tested in the modified Thomas test position. In this position, the hip is extended and the knee flexed.

(chiro.org)

The authors onfer that the the test position mimics the terminal stance and pre-swing position of the leg during running and sprinting. At this point in the running cycle, the biarticular rectus femoris muscle of the quadriceps group is lengthened over both the hip and knee, and is acting eccentrically to arrest extension of the hip and flexion of the knee. During this phase of movement, the tendon of the rectus femoris absorbs energy, which is released during the active flexion of the hip and knee through mid to late swing, accelerating the forward movement of the leg. Furthermore, before initial contact, the hamstrings must contract eccentrically, generating high torque, to decelerate the forward momentum of the tibia, increasing the load on the hamstrings and thereby possibly increasing their susceptibility to injury.

The theory explained in the article is that if the rectus femoris is very tight, there may be a rise in the passive elastic recoil of the rectus femoris tendon, increasing the acceleration of hip flexion and knee extension, which must be counteracted by the eccentrically contracting hamstrings. Therefore a greater load may be
placed on the hamstring muscles, potentially increasing their chance of failure and the risk of injury.

One major limitation I have with the above research is the use of the modified thomas test as a measure of quad flexibilty. During this test position, various structures are on stretch across the anterior hip/chain. Thus, stating this test as an isolated test for just quadriceps length is

inaccurate. This measure is more likely a measure of total passive hip extension.

In my next post I will look at movement patterning and the benefit of good patterning and how this may reduce uneccessary hamstring overload.

Thanks for reading

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