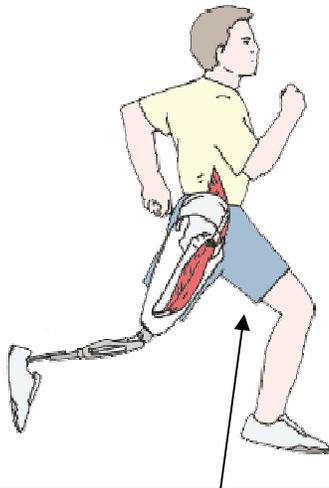


## **Hamstring Strains**

Hamstring strains in football and baseball players are a very common injury. Examination to determine the grade of the hamstring strain is necessary to determine course of treatment. Hamstring strains are classified as Grade I-III, with Grade III being a significant injury. There are many causes of hamstring strains, and many are listed below. However, for the sake of this article, I want to discuss the relationship between the hip flexors and hamstrings. We often find that an athlete with tight hip flexors and/or an anterior pelvic tilt will be more prone for hamstring injuries. This presentation is typically called the Lower Crossed Syndrome. The Lower Crossed Syndrome consists of tight hip flexors, tight low back erectors, weak glutes and weak abdominals and presents with a hyperlordosis (increased low back arch) or anterior pelvic tilt. This presentation causes three mechanisms of possible strain on the hamstring. First, the weak/or underactive glutes will place more demand on the hamstring to perform hip extension during running. The glutes can handle the workload, but the hamstrings cannot without sufficient glute contribution. Second, an anterior pelvic tilt will pull superiorly on the hamstrings and cause them to be “locked long”, or tight. Sometimes this is missed because when you lay the athlete on the table and the pelvis tilts posteriorly, the hamstrings will test as normal length. Third, if the opposite hip flexor is tight, it will limit the stride length ability of the opposite hamstring during full out sprinting/running. This will also make the hamstring act as short and place excessive strain on them. As you can see below, there are other factors, but if the above are not addressed during treatment, the injury may return in a matter of time.

### **Physical Factors Causing Hamstring Strain**

- Tight hamstrings
- Quadriceps-Hamstring strength ration imbalance
- Anterior Pelvic Tilt
- Previous injury
- Tight opposite hip flexors decreased stride length
- Muscle Weakness
- Leg Length discrepancy
- Electrolyte Depletion



In a full sprint the hamstring must eccentrically stop hip flexion and knee extension on the lead leg, and then stabilize the knee during mid-stance. Following mid-stance, the hamstring then has to concentrically contract to extend the hip and flex the knee. These multiple requirements of the hamstring place high demands on the hamstring and probable causes of hamstring strain.



Optimal stride length in pitching requires full hip flexor flexibility on the trail leg and full hamstring flexibility of the lead leg.



Lower Crossed Syndrome



Thomas Test- Shows tight hip flexors

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