

Predicting Recovery Time After a Hamstring Strain

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A patient strains (partially tears) the hamstring. A major question is how long it will take to return to pre-injury status. Some of the answers might be based on whether the injury occurred in a sprinter or possibly in extreme positions during stretching exercises in a dancer.¹ The location of the injury within the hamstring, which particular hamstring muscle is affected, and the size of the injury all play a part. Time to recovery for dancers with a stretching injury appears to be longer than for a high-speed running injury in sprinters.² A strain caused by kicking required longer rehabilitation times than hamstring strains resulting from running, tackling, twisting or turning.³ In most sports, especially in sprinters, most hamstring strains occur in the long head of the biceps femoris. It might be that in high-speed running, the long head of the biceps femoris undergoes the most lengthening at the end of the swing phase and/or early support phase. The more proximal the injury in the long head (i.e., the closer to the ischial tuberosity), the longer the time to return to pre-injury level.

The use of palpation for the most painful part closest to the ischial tuberosity, especially during the first three weeks after injury, gives the best prognostic information. In one study, palpation of the highest pain location correlated with MRI, up to six weeks.¹ Involvement of the free tendon of the biceps femoris as it comes off the ischium was a poorer prognosis than the musculotendinous area. For two sprinters, one with the shortest time for recovery (six weeks), the size of the injury was small and the distance to the ischial tuberosity was distal, as compared to the sprinter with the longest recovery time (50 weeks), who injured the proximal free tendon. In both of these cases, the initial symptoms were similar.

Both runners fell during a race and had to use crutches for four days after the injury. Isometric testing of the hamstrings and straight-leg raise also were similar at the first clinical examination compared to the non-injured side. Secondary injury of the hamstrings occurred in the semi-tendinosus muscle, considered the most common "tandem injury."¹ The anatomy of the origin of the long head of the biceps and semi-tendinosus off the ischial tuberosity shows the most lateral part of the ischium where the long head originates and right next to it (medially) the origin of the semi-tendinosus tendon. The tendinous origin of the long head is much longer than the semitendinosus tendon origin. "MRI investigations showed that the injuries were mainly located intrafascially."¹

In dancers doing stretching exercises at the end-range position, the areas most involved were the semimembranosus and quadratus femoris. This also might occur in athletes with similar motions. The quadratus femoris, which is a lateral hip rotator, also is a hip adductor. When a dancer does a split, tears may occur due to hip abduction. All of the injuries to the semi-membranosus in dancers involved the proximal free tendon. Injuries of the free tendon, rather than the muscle/tendon portion, seem to take longer to heal. This also is true in free tendon injuries to the Achilles, patellae and supraspinatus tendons, requiring longer rehabilitation.² Many of the dancers complained of

pain on sitting, even six weeks after the injury.

If an injury occurs during an exercise in an extreme position, even at a slow pace (patients might report a pop), and the pain is close to the ischial tuberosity on palpitation, the athlete should be told the tendon tissue is involved. A prolonged time for healing (a minimum of six weeks and probably much longer, 30-76 weeks) might be necessary before the pre-injury level is reached.²

The rehabilitation consisted of specific hamstring exercises for strength and flexibility and more complex whole-body exercises. Jogging with progressively increasing stride length, variable-pace running and interval running of gradually higher speed also is included. Everything is done in a pain-free mode. A study by Sherry and Best concluded that return to sports and prevention of hamstring strains is better if progressive agility and trunk stabilization exercises are added.⁴

In all of these studies, the use of Graston Technique or ART and other methods of soft-tissue treatment was not mentioned.

References

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SEPTEMBER 2008