

# HOW TO PREVENT HAMSTRING STRAINS

1. Stretch your hamstring muscles carefully during warm-up before training sessions and matches.
2. Use the flexibility training program for the hamstring muscles in 5-10 min – at least three times per week in the preseason period and two times per week during the season.
3. Use the eccentric strength training program for the hamstring muscles – at least three times per week in the preseason period and two times per week in the season.

## WHAT IS A HAMSTRING STRAIN?

The hamstrings is the name of the muscle group in the posterior thigh. It is composed of three muscles – semimembranosus, semitendinosus and biceps femoris. All of them (except the short head of biceps) have their origin at tuber ischi on pelvis and they insert at the inside and outside of the lower leg right below the knee. This means that they overlap two joints – they straighten the hip joint and bend the knee joint. Muscle strains usually occur in the interface between the muscle and its tendon. They occur most often during maximal sprints, either right before heel strike, when the hamstrings work eccentrically

to reduce the speed of knee extension, or during push-off.

## HOW COMMON ARE HAMSTRING STRAINS?

Very common!!! Results from Iceland and Norway 1999-2000 show that hamstring strains is the most common type of injury in male soccer and account for between 13% and 17% of all acute injuries. Ankle sprains, knee sprains and groin strains were all less frequent than hamstring strains in these studies.

## 1. WARM UP PROGRAM

Use the exercise on the photo to stretch the hamstring muscles carefully before training sessions and matches.



Use support – from a partner, if necessary. The knee should be bent at the start, and the ankle relaxed. Press the heel against the ground for 5-10 seconds to activate the hamstring muscles. Then relax and use your hand to extend your knee. Hold the stretch for about 20 seconds. If necessary, increase

the distance between your legs and bend your hips little more, but hold your back straight.

Stretch each thigh three times.

## 2. FLEXIBILITY TRAINING

It is assumed that one of the risk factors for hamstring strains are short muscles. If you want to increase your flexibility, it is not sufficient to stretch before training. You must also complete a systematic flexibility program.

Your partner raises your leg with the knee bend, until you feel the back of the thigh stretch. Hold this position for a few seconds before you press your leg towards your partner's shoulder. Hold for 10 seconds. Then relax while your partner stretches firmly, but cautiously by leaning forward. Hold this position for 45 seconds. It is important that the ankle is relaxed, in order to stretch the posterior thigh, but not the calf muscles.

Stretch each thigh three times.



### 3. STRENGTH TRAINING

Insufficient hamstring muscle strength is an important risk factor for hamstring strains. If the hamstring muscles are weak relative to the quadriceps muscles in anterior thigh, you may be at risk for a hamstring strain. It is therefore very important to strengthen the hamstring muscles, especially in the eccentric phase, i.e. resisting against knee extension.



One such eccentric strength training exercise has previously been used with apparent success in single teams, both in American football and Icelandic soccer. The exercise requires a partner who holds your legs stable. Lean slowly forward with a steady speed. Hold your back and hips straight. Try to resist with your hamstring muscles as long as possible, until you lose your balance and fall on your arms. As you get stronger make the exercise more demanding by increasing speed in the beginning of the movement, even by being pushed by your partner.



Let the chest touch the ground. Use your arms to push up immediately, until your hamstring muscles can take over the movement and pull you up to the starting position. This exercise is demanding, be careful in the beginning, use 2 sets with 5 reps, and increase slowly to 3 sets with 12-10-8 reps.

*Hamstring strains is the most common injury type in soccer and often lead to long absences from training and matches*

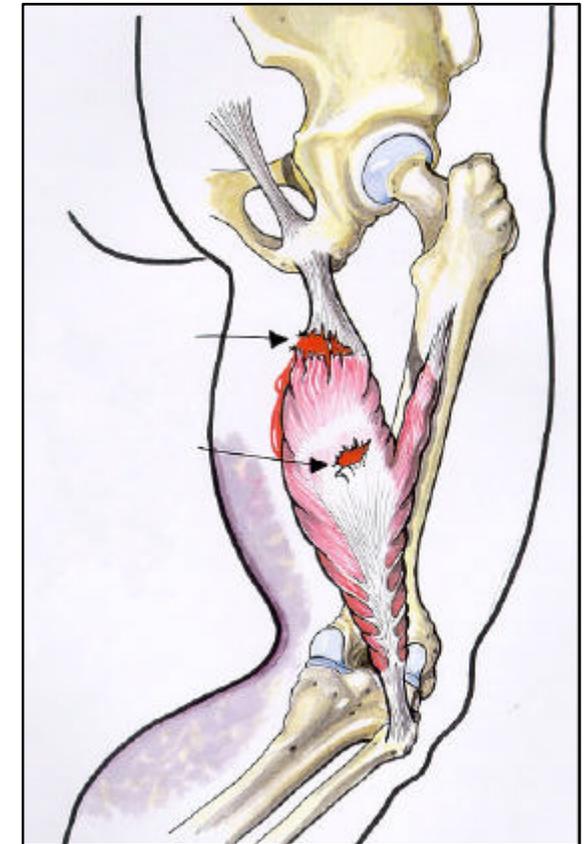
*To prevent hamstring strains you need to use a systematic flexibility and strength-training program in the preseason period and maintain strength and flexibility training during the season*

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## HAMSTRING STRAINS

### *Preventive measures*



**Oslo Sports Trauma**  
RESEARCH CENTER

## Nordic Hamstrings lowers program: Prevent hamstring strain injuries

Nordic Hamstrings is an eccentric partner strength exercise for the hamstring muscles. Within 10 weeks – if the program below follows – hamstring strain injuries can be reduced by a half!

**Starting position:** Kneel on a soft surface. Ask your partner to hold your ankles down firmly. **Exercise:** Your body should be completely straight from the shoulder to the knee throughout the exercise. Lean forward as far as you can, controlling the movement with your hamstrings and your gluteal muscles. When you can no longer hold the position, gently take your weight on your hands, falling into a push-up position. It is very important to have tension in the core and gluteal muscles and keep the upper body in a straight line!



Foto: Tom F Laursen/Grethe Myklebust

Week	Training sessions per week	Series and repetitions	Comments
1	1	2 series, 5 reps	One session only in the 1 <sup>st</sup> week – then you avoid soreness!
2	2	2 series, 6 reps	2 sessions; more is not necessary!
3	3	3 series, 6-8 reps	Increase the load gradually by controlling the movement with your hamstrings and your gluteal muscles.
4	3	3 series, 8-10 reps	Increase to full program with 8-10 repetitions.
5-10	3	3 series, 12 + 10 + 8 reps	When you can no longer hold the position, gently take your weight on your hands, falling into a push-up position. It is important to increase the load and/or the speed when falling forward, if you want to have success.