

Prevention of hamstring strains in football

Description:

Hamstring strains (muscle strains posterior in thigh) are one of the most common injury types in soccer, as well as in American and Australian football and among sprinters. In the 1999- and 2000-soccer season hamstring strains was the most common type of injury among soccer players in the two highest male football divisions in Iceland, causing 15% - 17% of the total number of acute injuries. In the 2000-season hamstring strains was also the most common injury type in the Norwegian elite division (Tippeliga), causing 13% of all acute injuries. Despite the high incidence of hamstring strains and frequently long absences from training and games, no evidence-based methods exist to prevent these injuries.

The aim of this study is to investigate whether the number and severity of hamstring strains can be reduced with an exercise program based on strength and flexibility training for the hamstring muscles. A strength training exercise Nordic hamstring was developed, where the emphasis is on eccentric component, i.e. where the muscle develops force while lengthening. Participants: Male soccer players from 16 of 20 teams in the Icelandic elite and first divisions and players from all teams (14) in the Norwegian elite division (Tippeliga), a total of about 600 players.

Method:

The study lasted for three years 2000, 2001 and 2002. In the 2000 season, the medical staff for each team prospectively registered injuries that caused time loss from match or training. For each injury the following factors were registered: Date of injury, activity (type of match, type of training), when during a match or training the injury occurred, player position when the injury occurred, location and type of injury, severity, and exact diagnosis. The coaches registered player exposure (training and match program). Before the 2001 season, an intervention program was developed consisting of three exercises: One stretching exercise to be performed in warm-up before all training sessions and matches, a flexibility training program to be performed 3 times per week in the preseason preparatory period and 2 times per week during the season, and a strength training exercise program with a large eccentric component (Nordic hamstring) to be performed 3 times per week in the preseason preparatory period and 2 times per week during the season. In the 2001 season, the Icelandic teams used to perform all three exercises, while the Norwegian teams were asked to just use the stretching and flexibility exercises, but not the strength exercise. In February 2001, the project was introduced in a seminar for physical therapists in the Norwegian elite soccer division (Tippeliga), and physical therapists and coaches in the elite and first division in Iceland. Coaches, physical therapists and the players received a booklet, which describe the exercises and the program. For the 2002 season all soccer teams in the Norwegian elite division (Tippeliga) and the two highest soccer divisions in Iceland were asked to participate in the intervention program using all three exercises, focusing on the strength training program. The exercise program was introduced and will be followed up in the same way as for the 2001 season. During the 2001- and 2002-seasons all injuries that cause time loss from match or training will be registered in the same way as earlier, as well as exposure data.

Training program - "Nordic Hamstrings"



[*See VIDEO of "Nordic Hamstrings"*](#)

Nordic Hamstrings is a strength exercise for the hamstrings muscles that emphasizes eccentric muscle contraction. You start from a knee standing position with a partner holding your ankles down. You then lean slowly forward with a steady speed. The back and hips are held straight. The forward falling is resisted with the hamstring muscles as long as possible, until balance is lost and you fall on your arms.

| Week | Training Number | Series/repetitions | Comments |
|------|-----------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 1 | 2/5 | <p>Straight upper body (with a slight bend in the hip) throughout the whole movement.</p> <p>Resist falling as long as possible.</p> <p>Fall on your arms, let the chest touch the surface and push up immediately, until your hamstring muscles can take over the movement</p> |
| 2 | 2 | 2/6 | Try to reduce the lowering speed more. |
| 3 | 3 | 3/6-8 | Gradually increased load. You can resist falling even longer, and for an increasing number of repetitions. |
| 4 | 3 | 3/8-12 | Full program: 12, 10 and 8 repetitions. |
| 5 | 3 | 3/8-12 | When you can control the movement in all repetitions, you can increase the load by allow more speed in the start phase. Additionally, you can have a partner give your shoulders a little push |

Practical tips:

- Use a soft material under your knees. The need for this will increase as the loading increases.
- Try to relax in the ankles and calves. If not, you can potentially get cramps.
- Follow the suggested progression, and you will avoid overuse and possible injury.