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HAVE WE MADE ANY PROGRESS?

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In spite of all the research and additional understanding of hamstring muscle injures over the past 20-30 years, we have not reduced the incidence of first time injuries and the recurrence rate is still extremely high. However recent research has given us reasons for optimism that we may be able to reduce the incidence, Return To Play (RTP) time, and recurrence rate of hamstring muscle injuries. Research published over the past couple of years has led to an increased understanding of these challenging injuries.

We now understand that certain types of hamstring injuries are more likely to require prolonged rehabilitation and delayed RTP. Muscle tendon architecture may be a factor in the development of hamstring injuries. The aponeurosis morphology of the Biceps Femoris Long head (BFLh) may play a significant role in determining stretch distributions throughout the muscle.

There are a number of factors that have been suggested as good indicators of severity and prolonged time to return to play. Askling suggested that the closer the lesion was to the ischial tuberosity the longer to return to play. The clinical parameters of self-predicted Time To Return To Play (TTRTP) and passive straight leg raise deficit were independently associated with the TTRTP.

Re-injury after RTP remains a major problem. It is more common when the injury involves the biceps femoris. The number of previous hamstring injuries, active knee extension deficit, isometric knee flexion force deficit at 15° and presence of localised discomfort on palpation just after RTP are also associated with a higher hamstring re-injury rate.

There is increasing evidence that even after RTP, eccentric hamstring strength is reduced, which may be a factor in the high recurrence rate of these injuries.

While the concept of eccentric muscle training as an important component of the rehabilitation process has been with us for many years, it now appears that these exercises must be in the lengthened position. As a result, lengthening eccentric exercises such as the Nordic Hamstring Exercise (NHE) the Romanian dead lift, and Askling's extender, diver and glider exercises are now becoming the mainstay of post-injury rehabilitation.

For a number of years the only RCT comparing different hamstring rehabilitation programs was Sherry and Best's study (2), which reported significantly lower re-injury rates in athletes who completed a Progressive Agility and Trunk Stabilization (PATS) program, compared to those whose rehabilitation programs focused on isolated hamstring strengthening and stretching.

Silder (3) demonstrated a similar degree of muscle recovery at the time of return to sport in subjects with an acute hamstring strain injury treated with either the PATS program or a program with a heavy emphasis on Eccentric Strengthening (PRES).

Askling performed two identical studies (1), one in footballers and one in sprinters and jumpers, and demonstrated that a rehabilitation protocol consisting of mainly lengthening type of exercises is more effective than a conventional protocol in promoting return to sport after acute hamstring injury.

The use of autologous blood injections such as Platelet Rich Plasma (PRP) has become widespread in recent years primarily in the treatment of chondral and tendon problems. Recently the first two high quality studies have been published examining the use of PRP in muscle injuries. The two studies produced conflicting results.
Previous attempts to develop a tool to predict the likelihood of hamstring injuries have been based on isokinetic testing. More recently other tests have been proposed. These include the use of regular clinical monitoring of hamstring strength during a season in football players with a past history of hamstring strain, preseason Single Leg Hamstring Bridge (SLHB), the use of the Nordic board test, hand held dynamometer and single leg hop test to measure hamstring strength.
Prevention is better than cure and there is evidence that a program of eccentric hamstring exercises such as the yo-yo curl or NHE, can reduce the incidence of hamstring muscle injuries.
There is still much work to be done, but we might be finally getting some answers.

References

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