Exercise related back & hamstring stiffness

The most common problem facing endurance athletes

Posterior thigh, back and hip soreness following prolonged exercise is undoubtedly the most common problem reported by endurance athletes as a result of repetitive impact on load bearing joints.

The most common feature of this gradual onset of pain is that is it often linked to increased stiffness in the hamstring muscles, frequently the groin and / or buttocks and occasionally the calf muscles. The gradual stiffness, if ignored, may often result in true muscle tears and strains as well as diminished running performance as tight hamstrings, groins and calves limit stride length and increase energy expenditure in overcoming this resistance. Treatment of the tears may repair the damage caused by continuing to accelerate through an increasingly tightening muscle but commonly the underlying cause of the tightness may not be established or treated and so recurrent episodes are likely.

The typical scenario involves the athlete complaining of muscle soreness, particularly in the buttocks, back, hips and groin with stiffness noted in the lower back when arching backwards. Some recovery of symptoms occurs over the subsequent hours or even days leading up to the next training session but what is often missed is that there is often an incremental loss of hamstring, groin or calf flexibility.

Too frequently athletes who may be meticulous in documenting body weight, BMI and hydration, often don't set measurable land marks to ascertain their optimal level of flexibility. It is therefore predictable that gradual losses of flexibility over subsequent training sessions are not noted and can result in either an acute muscle tear or strain or quite frequently lead to over use issues such as ITB friction syndrome or hip joint inflammation (capsulitis or bursitis) as an increasingly tightening iliopsoas muscle (strong hip flexor), internally rotates the hip joint and effectively places the gluteals (buttock muscles) at a biomechanical disadvantage.

Stretching of the hamstring, groin, buttock and calf muscles, often frustrates athletes by not achieving improved flexibility. The method of measuring flexibility may also be deceptive especially if a simple forward reach test is undertaken which may mask flexibility losses in a specific muscle group. A much more reliable and accurate method of hamstring flexibility assessment would be to lie on the back, place a towel under the heel of an outstretched leg and then passively pull the straight leg upwards using the angle to perpendicular as the recorded measure. Running athletes should aim to achieve at least 90 degrees of hamstring (posterior thigh) flexibility between training sessions.

In research conducted by the author in 2011, recently published in the Journal of Manual Therapy, loosening the joints of the lumbar spine through specific manual techniques (spinal joint mobilisation) outperformed passive sustained hamstring stretching in achieving significant immediate improvements in hamstring flexibility when compared over 3 and 6 minutes. Stretching the hamstrings over 3 minutes surprisingly did not significantly improve flexibility whereas mobilising the joints of the lower (lumbar) spine for 3 minutes, resulted in a very significant improvement in hamstring flexibility. When tested over 6 minutes, passively stretching the hamstrings did result in significantly improved flexibility but results were still below those of both the 3 minute and the 6 minute spinal mobilisation group.

Perhaps an interesting explanation might be that the repetitive impact of running on the joints of the lower back, not only causes back stiffness, but may be responsible for irritation of the nerves of the lumbar spine (sciatic nerve) leading to increased activation of the nerve and consequently the muscles supplied by these nerves.

Runners may well find that loosening the lower back prior to undertaking stretches of the hamstring, groin and calves results in much greater and more rapid return of flexibility.

Try the following lower back and pelvic stretches and measure flexibility gains.

Piriformis stretch. Tight buttock structures are often implicated in sciatic nerve irritation and subsequent hamstring tightness.

Slump stretch. A stretch for the entire nerve complex. Bend the neck forward to complete the stretch.

Psoas muscle stretch. Tightness can further compress the joints of the lumbar spine and internally rotate the hip joint.

Anterior hip joint capsular stretch. Internal rotation of the hip joint often results from a tight psoas muscle.