

Lower back Injuries

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I injured my lower back in late March - not running, but lifting and stacking a couple of tonne of tree trunk sections. Continuing to run with the injury (at the 2004 national championships) resulted in other problems that forced me to stop running (actually, I had trouble walking) and to see a Sports Injury doctor and physiotherapist. The initial action (after X-rays showed no significant spinal deformation) was to avoid any heavy load bearing activities for 4 weeks. During this time I commenced a set of stabilising and endurance developing exercises for the lower back, hips and thighs and started cycling for cardiovascular exercise (a more hazardous activity than running I soon discovered, but one I have continued, usually once per week).

Following that, I gradually restarted a running program, beginning with one run per week of 2-3km. After 10 weeks, I was up to running 4 times a week with some speed work. The process of getting back to my pre-injury state consisted of:

- identifying the problem through visits to a sports doctor and physiotherapist
 - an initial period of rest and a short course of anti-inflammatory tablets (the latter something I might not do in the future)
 - development of a set of stabilising/strengthening exercises designed not to exacerbate the injury, but to strengthen the structure that support the spine
 - a graded return to running, increasing distance, then holding that steady for a while and increasing the speed, then increasing the distance and repeating the process
 - having a set of short term goals and a longer term goal - essential for motivation
- (March 2006: I still do a set of exercises several times a week and have only recently returned to something like the form I had pre-injury)

One of the things that has improved as a result of the above is that I now know more about the spine than I did before. I think of the spine as a set of blocks (vertebrae), separated by pads (disks), supported and moved by guy wires (sets of muscles) with motion limited by connective ties (ligaments). The spinal cord runs through holes in the vertebra and nerves servicing various parts of the body branch out from the spine. This simple model overlooks the complexity of each element of the spine, but serves to illustrate a few simple ways of minimising spinal problems.

The properties of the various components of the spine change with age and/or as a result of injury. Bone structure changes as a result of the demands placed on it and through demineralisation (loss of calcium) associated with such things as changed patterns of activity and hormone levels. Connective tissue becomes less elastic, probably due to increased cross linking of collagen fibres. From the age of around 30 onwards, muscle mass begins to decline as muscle fibres die (mainly as a result of failure of the nerves that activate them), a process that accelerates from around age 50 onwards. It is not all doom and gloom, masters athletes can reduce the rate of degradation. High impact activities like running help to maintain strong bones as the body responds to the demands placed on it. These demands need to be applied in a graded manner to avoid single trauma or repetition injuries that will result when the load imposed exceeds the failure level of groups of tissues. Regular cardiovascular exercise also maintains a healthy blood flow to and from tissues to regenerate and repair those tissues. High intensity training reduces the effects of muscle fibre loss by

strengthening neuromuscular patterns and increasing the size of the surviving muscle fibres. Interval training, hill sprints and resistance training must be a part of training if you want to slow down loss of performance.

After a night in bed, the spinal disks become hydrated, separating the vertebrae more - you can be approximately 2cm taller early in the morning than at the end of the day. Activities that involve full flexion (bending) of the lumbar spine (the section from the rib cage to the hips) just after arising from bed when the disks are swollen can have a greater risk of injury. It is better to leave activities that flex or load the spine until after you have been up for some time.

During the day, if you sit hunched over, with the spine flexed, ligaments are stretched. These ligaments take time to return to the state where they support the unflexed spine, time that increases with age. Spinal muscles will also be stretched. In a sense, the spine has a memory of its immediate past function. If you then move off to an activity that loads the spine, the risk of injury is higher. Don't sit hunched over in the stands and then jump up to compete in an event. If you have to spend some time sitting between events, change your sitting posture regularly.

The muscles that support the back are like other muscles in that they tire with repetitious demand. Lifting a certain weight once may be well within the safe limits for the back, but carrying out that action many times may lower the failure level of the total structure as muscle fibres tire, leading to injury. Combining loads in three dimensions eg, flexing, bending sideways and twisting, adds to the potential for injury.

The lower back and pelvic area is the platform for running - it pays to look after it. The above is not a substitute for professional medical advice. If you have a problem, get the cause diagnosed by a sports doctor and undertake a planned and monitored program of remedial action.

Reference: McGill, Stuart. 2002, "Low Back Disorders: evidence-based prevention and rehabilitation", Human Kinetics.

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