

Proper mechanics for common activities to prevent injury and re-injury.

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According to Health Statistics Canada, the province with lowest number of days lost due to illness or disability in 2008 was Alberta with an average of 6.1 days lost per person. Nova Scotia was rated to have the most number of days lost at 9.7.¹ Amongst other provinces, Manitoba had 9.0 days lost and British Columbia had 8.0 days lost per person.¹ 30-40% of those absences were attributed to back strains from improper lifting, handling and repositioning both at work and at home.² Rotator cuff related injuries came second to back pain and accounted for the second highest Workers' Compensation Board (WCB) claims last year.²

Laser therapy continues to prove its efficacy in treating such soft tissue injuries. Other conditions that result from improper biomechanics, such as Achilles tendonitis, plantar fasciitis, tennis and golfer's elbows, have been known to completely resolve with a series of LaserHealth® Solutions treatments. However, since prevention is better than cure, here are some tips for preventing injury when getting on with everyday life:

Figure 1



When lifting a load, reach down by bending the knees in a squat rather than bending the back³ as shown in Figure 1³. The quadriceps and hamstrings muscles on the thighs are much stronger than the spine and back muscles to help shift the load. Repetitive bending fatigues back muscles and causes them to spasm and strain.

When carrying any weighted items such as groceries, it is best to distribute the load equally on both arms to ensure minimal strain. The bicep muscles on the front of the arms are powerful enough to carry luggage or grocery bags but can only be activated by bending the elbows. Carrying luggage with straight elbows, strains the forearms and supraspinatus muscle which lies on top of the shoulder blade. This supraspinatus muscle is only designed to raise the arm without extreme weight on it, contrary to which, it gets inflamed, strains or tears. So next time you are going grocery shopping remember to bend the elbows.

Regular cardiovascular exercise has been known to be an excellent mood enhancer due to the release of 'happy hormones': Serotonin and beta-endorphins. However, getting straight into a power walk or a run, without proper warm up can cause muscle damage. Light jogging on the spot for 5 minutes followed by the three stretches below (Figure 2⁷) improves circulation, joint flexibility, and reduces tightness just before any lower limb endurance activity^{5,6}. Holding each position for 15-20 seconds makes the stretch effective.

When walking briskly or running, the arms should be kept close to the body, with elbows bent to about 90°⁸. The arm motions set the pace for the legs. Quicker arm motions, set a quicker leg pace⁸. The head and trunk should be relaxed and mostly straight in relation to the lower limbs⁸. Some research shows that a slight forward flexion of the trunk allows for more energy when pushing off the ground⁸. Shorter strides are more efficient and less likely to induce injury. Extending the hip too far back strains the hamstrings on

Figure 2:



a) Inner thigh - Adductor stretch b) Quadriceps stretch c) Hamstrings and Calves Stretch

the back of the thigh⁸. Similarly, full extension of the knee when completing a stride increases the risk of impact trauma⁸. Finally, each foot should gently reach the ground with successive movements, rolling off from heel to the base of toes⁸.

The Calf muscles (gastrocnemius and soleus) also play a role in the biomechanics of walking or running. When these muscles are tight, they don't allow for the heel to reach the ground when moving through a stride. Body weight is thus translated to the arch of the foot causing significant stress to the plantar fascia and results in an inflammatory condition known as plantar fasciitis. There is also high correlation between repetitive heel strikes and retrocalcaneal bursitis⁹, which is inflammation of the fluid sac at the back of the heel.

There is an art to performing life's common activities. Perfecting the art by employing the proper biomechanics will ensure a healthier quality of life. Should you need treatments for any existing repetitive strain injuries, visit a LaserHealth[®] Solutions clinic near you for a speedy recovery.

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