

Common gym injuries and how to avoid them

I often quote to Personal Trainers who undertake the Rehab Trainer course that 'There are no bad gym exercises, only bad bodies for certain exercises'. What I refer to with this quote is that many of us lack the fundamental flexibility to perform certain movements in the gym without compromising the musculoskeletal system. This is due to poor mechanics somewhere in the chain. If I had to pick a handful of exercises that are potentially damaging to the body, then these three would be my pick:

1. **Dips:** Due to most of us having tight pectoralis minor (normally due to poor scapular position caused by poor posture), when we perform deep dips, the tendency is for the scapula to move into an 'anterior tilt' direction at the bottom of the movement. This is due to the pec minor tightening up as we descend into the dip. What this does is wind up the rotator cuff and biceps tendon around the humeral head, and thus potentially leads to catastrophic injuries to these structures.
2. **Deep squats:** Powerlifters perform deep squats usually with no ill effects. The reason is that over years and years of performing the movement, they develop the necessary functional flexibility to cope with this deep position. The inexperienced lifter lacks the hip flexibility to allow the pelvis to remain in a neutral tilt, and thus the lumbar spine in neutral. As the inexperienced lifter descends into a squat, the tension taken up by the adductor magnus and deep glutes tends to throw the pelvis into a posterior tilt. This then causes the lumbar spine to flex. Flexion of the lumbar spine creates enormous disc pressure, so under load of a deep squat, the discs in the lumbar spine can potentially be injured.
3. **Stiff legged deadlifts:** The bodybuilding variety whereby the knees are locked out straight. This is what the ergonomics experts call 'stoop lifting'. As the hamstrings start to stretch on the descent of the movement, the pelvis will start to move into a relative posterior tilt direction to the spine (see discussion above). The end result is a curved or flexed spine. Again the lumbar spine discs generate enormous pressure and this may result in disc bulges or worse, prolapse. Furthermore, evidence from biomechanical and muscle activity studies show that the strong paraspinal muscles – the longissimusthoracis and iliocostalis – lose their ability to function. So they basically switch off when the spine is curved. All we have now supporting our spine in this stoop posture is the ligaments. Again, a recipe for disaster.

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So the morale of the story is that unless you have fantastic flexibility in the pec minor, deep gluteals, adductor magnus and hamstrings (which most of us don't), these exercise if performed too regularly or with too much load, can cause the most serious of gym injuries.

Factors other than exercise selection can lead to injuries in the gym. Listed below are a few of the factors to consider.

1. **Early morning heavy gym sessions:** When we wake up in the morning from a delicious sleep, our lumbar spine discs are swollen due to us lying horizontally. The disc has reduced vertical pressure from gravity. What happens is that the disc then 'sucks up' fluid overnight. So when we wake up not only are we slightly taller, but the disc is already under pressure due to the extra fluid. If you are ever going to hurt a disc due to heavy squats or deadlifts, then you have a much better chance of doing so in the morning. As a rule of thumb, three hours is a starting point for delaying heavy lifting.
2. **Poor program design:** Due to the 'stress' caused by weight lifting, the body releases the hormone cortisol. Cortisol is a hormone that basically breaks down all the tissues in the body – this is called a 'catabolic' process. Cortisol release is influenced the most by working sets. The result for us is that tissues such as tendons and cartilage will then deteriorate under the influence of cortisol. Other factors such as work stress, family stress etc..also release cortisol. Cortisol is balanced out by the hormone testosterone. This is a building or 'anabolic' hormone that our bodies also release. So the hormones fight it out to either destroy or build the tissues in the body. For this reason, the number of working sets performed in a session needs to be limited. For the 20-30 year olds with higher testosterone levels then 14 is a good number. Drop two working sets for each decade after that. So 60+ year olds should stick to no more than 4 working sets – not many.
3. **Push – pull emphasis:** Too many gym programs focus on the push exercises – bench press, shoulder press etc... In terms of volume, this tends to dominate the pull movements such as rows and pulldowns. There needs to be a balance between push vs pull as too many push based movements leads to shoulder and neck problems. If you wanted to weight one direction in your favour, do more pull based sets than pushed based sets.