

Low Back Pain

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Some Interesting Facts

I recently attended a course run by Prof Peter O'Sullivan, world renowned clinician & researcher on low back pain (LBP). Here are some of the major points discussed at the course.

Factors shown to be possible contributors to LBP include:

Non-mechanical:

1. 'Genetics': If one parent has LBP the risk is increased for the child. If two parents suffer from LBP, the risk is significantly increased. It is not known if this is due to actual genetics, or learned postures, behaviours or lifestyle factors.
2. Depression: this is known to be a significant risk factor for developing chronic LBP. In one study of 300 patients with LBP, depression was 2.3x more predictive of chronicity than adverse MRI changes (Jarvick, 2005).
3. Negative beliefs. The belief pain would be persistent was a significant contributor to chronic LBP.
4. Cigarette smoking.

Mechanical factors:

1. Repeated or sustained flexion or extension, particularly when combined with rotation.
2. Our sitting postures are predictive of how we move. If you regularly sit with your pelvis in posterior rotation, you are likely to adopt this during lifting, sport, vacuuming, etc, (Mitchell et al 2008).
3. Lifting technique. While the jury is still out, the 'bend your knees not your back'

instruction seems flawed. Recent evidence suggests the flexed back lift may actually create less tissue stress than the squat lift. (Holder, 2013).

Types of mechanical back pain:

While there are many classification systems in use for diagnosis, it is worth considering mechanical LBP as being one of two possible impairments:

1. Movement impairment. These patients avoid pain, and have restrictions toward directions that cause pain. There will often be excessive muscle guarding, and the patient will be very fearful of pain. 'Core strengthening' is often contraindicated.
2. Control impairment. This is essentially the opposite. These people spend most of their time in positions that cause pain. The typical slumped sitting posture with posterior pelvic tilt is the most common example. There is often under-use of the core, and poor endurance in muscles that protect against pain. Core strengthening will often be an important component of management in these individuals.

Imaging and LBP:

In a sample of pain-free young adults (average age 25 years), there was evidence of disc degeneration in 50% of subjects.

In a sample of 300 pain-free middle aged subjects (average age 45 years), MRI findings revealed:

- 91% incidence of disc degeneration.
- 64% had disc bulges.
- 56% had loss of disc height.
- 32% had disc protrusions.
- 38% had annular tears.

(McCullough et al 2012).

Interestingly, in a study where subjects with LBP who were referred for imaging were compared to those who had no imaging, outcome measures showed the imaging subjects to have:

- Poorer health outcomes
- Poorer perceived prognoses
- Greater reliance on disability compensation.
- Greater likelihood of progressing to surgery.
- Greater likelihood to be not working at 1 year.

In a study that examined long-term consequences of disc prolapse:

- Subsequent loss of disc height was not predictive of future LBP.
- 83% of patients with prolapsed discs had complete recovery by 23 months (many by 6 months).

Trends in Management of LBP:

In the USA, over a 10 year period (1994 – 2004) rates increased for:

1. Lumbar MRI referral – from 348,000 to 1,420,000.
2. Lumbar injections:
Epidural: 353,400 to 2,395,200.
Facet joint: 79,700 to 285,800.
3. Prescription of opioids: 8,420,000 to 18,500,000.
4. Inter-vertebral fusions: 13,600 to 61,000.

Concurrently over that time, there was no measurable reduction in the disability due to LBP.

Trends in LBP incidence:

In the USA over a study period in which circulatory disorders decreased (11.8% to 9.5%), and respiratory conditions decreased (3.6% to 3.1%), the incidence of musculoskeletal conditions – mainly LBP – increased (from 20.6% to 25.4%).

Some common misconceptions patients have about LBP:

1. “Bending is bad for your back”. It is true that



repeated or sustained bending is sometimes problematic. However our backs are made to bend, and regular full range movement is in fact healthy for our backs.

2. Many backs are “unstable”. While a popular notion, this is rarely true. Most backs are very strong structures, even after injury.
3. The back or pelvis “goes out of place”. Except in cases of severe trauma, this simply doesn’t happen. However the notion makes sense to the patient who feels something is out, and is promoted by some practitioners whose philosophies are based on this idea.
4. “Most LBP is associated with a weak core”. This occurs in certain individuals. However in many cases of persistent LBP, there is over-activity of core muscles, and this over-bracing often contributes to pain. For example, chronic coccygeal (tail-bone) pain is sometimes due to an over-active pelvic floor, and joint or discogenic LBP can be exacerbated by excessive muscular compression through the region.
5. “Movements that hurt are harmful”. In many cases, protective avoidance of movement contributes to pain, and is less healthy for the spine.

Co-morbidities with chronic LBP include:

- Pelvic girdle pain
- Headaches / migraine
- Fibromyalgia
- Irritable bowel syndrome
- Chronic fatigue syndrome
- Depression
- Sleep disorders

The pain and disability due to low back pain will be influenced by many factors, and will often be present without actual tissue damage. Factors include:



- Culture.
- Degree of fear & negative emotions.
- Experience & beliefs about LBP.
- Sleep deprivation. Sleep problems in a group of 16 year olds was shown to have a 2-4x greater risk for LBP over the following 2 years (Auvinen et al 2010).
- Context. Other life factors can override or heighten pain sensation.
- Degree of focus on pain.

- Stress levels
- Amount of muscle tension.

Certain personality traits or psychological disorders can also have a significant influence on pain & disability:

1. Catastrophising behavior. There will be a magnification of the threat value of pain & a pessimistic outlook.
2. Anxiety. This is associated with a belief in a lack of ability to control pain, as well as heightened stress levels and muscle tension.
3. Hyper-vigilance. There will be an excessive fixation on pain and inability to stop thinking about it. Every symptom is analysed in the finest detail.
4. Depression. Already discussed above.
5. Low self-esteem. Associated risk factors include dependence, inactivity, and self-destructive behavior.

Three examples below help to illustrate the potential influence of non-mechanical factors on pain:

1. There was a famous case of a builder who was rushed to emergency, having shot a nail through his shoe. He was in severe pain & distress, & required narcotic analgesia. The X-ray taken with his boot still on is shown. When the boot was removed, it was revealed that the nail had in fact gone between the toes, not breaking the skin.
 
2. In a study assessing the influence of memory & experience in chronic LBP, patients observed a subject bending over to lift a box from the floor. Nine out of ten subjects experienced immediate pain in their own lower backs, simply through observation (Shimo et al 2011).
 
3. A person with LBP (who was in fact a medical practitioner) admitted that they had extreme fear about the consequences of their pain. When asked why, they replied “Because the back is like the heart – too scary to think about when something goes wrong.”

This highlights the importance of reassurance when managing patients with persistent or disabling pain. They should see a practitioner who has a good understanding of the problem, and who can put things in perspective. It also supports the important recommendation that patients remain active as part of their recovery, to reduce pain focus and provide counter-stimulation, as well as to help maintain healthier tissues.

While the placebo effect is well recognized, and has been measured to account for up to 30% to 40% improvement in certain treatments, the ‘nocebo effect’ is rarely considered. It is the potential for ‘sham’ treatment or negative perceptions to make the condition worse.

As practitioners, our beliefs & terminology can greatly influence patient emotions, beliefs, and hence pain & disability. Common terms such as ‘instability’, ‘chronic’, ‘arthritis’, ‘degenerative’, or “you’ve got the back of a 70 year-old” are not helpful when describing an opinion about the cause of a patient’s pain. The description can promote a long-term negative outlook that leads to ongoing disability. Knowing that 91% of pain-free 45 year olds have ‘degeneration’ in their spines should caution us that the cause of the patient’s pain is not necessarily shown on a scan, and can be influenced by many factors other than actual tissue damage.

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