

## **There is no such thing as “Non-Specific back pain”**

Stuart McGill, University of Waterloo

[mcgill@uwaterloo.ca](mailto:mcgill@uwaterloo.ca)

[www.backfitpro.com](http://www.backfitpro.com)

“Non-specific back pain”, “Ideopathic back pain”, “Lumbosacral strain” are terms used to label patients with back pain. There is no shortage of studies performed on groups that have non-specific back pain. Not one has concluded with a very helpful recommendation. Generally studies find that everything, or nothing, works in terms of treatment approaches. This is because back pain is not a homogenous condition but has many causes and treatment approaches. If there are two patients with different causes of their pains, then one approach may be very effective for one but may hurt the other. On average there is no effect, but as individuals there may be a massive effect when the treatment is matched to the specific disorder. Proper assessment can categorize people with back pain to identify specific prevention and rehabilitation approaches that are much more effective.

Trying to diagnose back troubles based on anatomical structure is possible but difficult. Some studies have shown specific tissues cause pain in individuals using local anesthesia approaches but these don't have a high concordance with troublesome “features” seen on MRI or CT scans. Conversely, features seen in medical images associated with pathology and pain are often seen in asymptomatic workers. Even if the structure causing pain is known, this knowledge provides little guidance in reaching a cure. The only clinician who benefits from the tissue based diagnosis is the surgeon who attempts to “cut the pain out”. The argument presented here is that back pain is almost always exacerbated by a particular motion, posture or load. Motions, postures or loads that exacerbate the back pain together with those that are tolerated can be identified. The prevention plan is then designed to eliminate the specific causes (motions, postures and loads identified through provocative testing) and the rehabilitation plan is designed to enhance the tolerances. In this way back patients are categorized based on their intolerances. For example, workers with “spine flexion bending intolerance” will probably be exacerbated by sitting, tying shoes etc., yet very high load tolerance is found if the spine is not bent but kept in a neutral posture. The prevention plan and rehabilitation approach becomes clear. Assessment to properly classify back pain sufferers in terms of painful motions, postures, and loads, provides clear clinical direction and eliminates the unhelpful non-diagnosis of “non-specific back pain”.

### **What causes back troubles?**

There are many causes of back troubles with the scientific literature evidence strongest for mechanical causes. These include loads on the back tissues that exceed their tolerance in terms of load magnitude, repetition and duration. For example the spinal discs have a fatigue life for the number of bends that they can withstand before they fail. Yet this relationship is modulated by variables such as hydration (time of day), the corresponding load at the time of the bending motion, the direction of the bending axis, to name a few.

If the individual continues to bend the painful disc, for example they continue to flexion-stretch their back, they will most likely experience worse symptoms – or at least a recurrent aggravated situation. The same mechanism is exacerbated by sitting – here the spine (particularly the lowest lumbar disc) is flexion bent. Strangely, these patients are sometimes told to pull their knees to their chest to obtain relief. This activates the stretch receptors in the back extensor muscles resulting in short term analgesia for about 15 minutes, but this bending has caused further damage to the underlying pain mechanism. They will be caught into the cycle by repeating the knees to chest stretch the following day. While these types of patients are relieved by frequent posture change, and even fast walking can be relieving, they simply cannot tolerate sitting. Sitting posture can be assisted with lumbar support to prevent lumbar flexion. Special exercises designed to combat the cumulative stresses from sitting are also usually helpful. Here, encoding the “hip hinge” movement pattern to replace the spine bending pattern is important. This is just one example where provocative testing and classification of the back pain sufferer results in better prevention and rehabilitation approaches. Interestingly, ergonomic job layout change and design may be helpful but the worker must also enhance their use of back sparing body mechanics.

### **Assessment and Provocative testing: Motions, Postures and Loads**

The typical orthopaedic exam determines the range of spine motion, some neurological measures such strength of reflexes, and perhaps some qualitative measures of muscle strength. These measures provide little guidance for designing prevention and rehabilitation programs. Further, we published a study where we tracked back pain patients in a pain clinic. Their scores obtained from the assessment had very little relation as to who recovered and returned to work. Asymmetries of both strength and movement (particularly in the hips) have been shown to be associated with, and predictive of, back troubles. Imbalance in torso muscle endurance around the torso has also been shown to be predictive of future back disorders. Thus correction of asymmetries with corrective and therapeutic exercise should be the first stage of any rehabilitation program. However, provocative testing, in other words tests to intentionally provoke discomfort, is essential in determining which postures, motions, and loads are exacerbating of the pain and which ones are well tolerated. For example, simply have a pained patient sit upright on a stool and pull upright on the stool seat pan to compress the spine. Usually this causes no discomfort. Then slouch with the spine causing flexion, and repeat the pull. This often causes pain and also identifies the person who is intolerant of flexion. Avoidance of spine flexion removes the cause, and specific exercises performed with a neutral spine have been shown to be most effective for this category of back pain.

### **What every patient/worker needs to know**

The occupational medical system does not always inform all involved parties with the necessary information to optimize work recovery. Every back pained worker needs to know the following to facilitate their recovery:

1. Exam results – their current scores give context to the future goals;
2. Natural history and prognosis – there is no evidence that back disorders last into retirement and in fact are often addressed with appropriate classification and treatment plans;

3. Causes of pain – patients are often amazed to find out that the way they move and activate muscles can eliminate pain;
4. What they must avoid – removing the cause of the disorders is obvious, this also allows the therapy to be more effective;
5. Recovery plan – a progression that begins by addressing the movement disorders with corrective and therapeutic exercise, then stabilizing those body areas needing stabilization and mobilizing those which need mobilization, then enhancing endurance so that joint sparing movement patterns can be repeated even when fatigued, then building some strength and possibly some power generating ability at the hips and shoulders if the occupational demand is present.

### **Implications of the tests**

Provocative testing, when combined with movement screens for joint symmetry of motion, strength, and endurance, underpins a powerful classification for back-pained individuals. Classification enhances the therapy plan and identifies what to avoid. The process is continued throughout the recovery process to define tolerable levels of load in specific postures and movements so that the “dosage” of therapeutic exercise can be tuned to the individual.

**In Summary:** There is no such thing as “non-specific back pain” - there are only those individuals who have not had thorough assessment. There should be no further studies of people with non-specific back pain, as they do not provide any insight into prevention or treatment programs for the individual. Classification of back-pained workers into subcategories based in intolerance to specific motions, postures and loads provides more insight to solve the problem.