**Empowering Self Advocacy: Taking charge of your back pain**

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**Key Messages**

Most patients rarely receive the most important part of the prescription to get rid of back pain from their doctor – the knowledge and understanding of their condition required to become their own best advocate. They remain clueless and frustrated, left in the dark about what behaviors must be stopped in order to alleviate the cause of their pain. As well they need guidance as what is required to build a pain-free foundation that will allow them to get back to enjoying all their usual activities.

* A thorough assessment will identify the cause of pain in terms of offending motions, postures and loads.
* Studies on non-specific back pain are not helpful just as studies on non-specific head pain would not be helpful, nor tolerated.
* Avoiding these pain triggers will allow a de-sensitization of the pain pathway.
* A specific and individualized diagnosis will guide each person on what to not do and what to do to rid themselves of pain and discomfort.

Getting “passive” treatments such as prescriptions for pain medication without a plan to stop the cause itself rarely creates a long-term solution. While medication may be a part of a broader approach, a thorough assessment of an individual’s specific pain triggers will identify a pain mechanism that will guide a targeted treatment plan.

There are several popular myths about back pain that can thwart recovery. “Non-specific back pain”, “Ideopathic back pain”, “Lumbosacral strain” are terms used to label patients with back pain. These “non-specific diagnoses” indicate that the patient has not had a competent assessment of their pain mechanism. Yet another popular diagnosis is “degenerative disc disease”. I am so disheartened when a distraught patient expresses their fears to me regarding this supposedly progressive disease. When I tell them that in actuality they have no such disease, their reactions vary from relief to anger towards the person who mislabeled their condition. A “degenerative disc disease” diagnosis is the equivalent of telling your mother-in-law with wrinkles that she has “degenerative face disease”! It isn’t likely that you will be able to hold your clinician accountable – that machine is too big. The same can be said for the false hope that a thorough assessment that will provide you with your complete roadmap to recovery is possible in a typical 15 minute doctor’s appointment. Surprisingly, many people can actually be guided through a more thorough self-assessment that will reveal their precise pain triggers that come in the forms of various specific motions, postures and loads. This approach often introduces patients to the first accurate assessment of their unique causes of pain they’ve ever received. Based on the pain triggers, the next step is to guide movement strategies that allow motion while avoiding the triggers. In treating patients with back pain as individuals, they are able to understand why one approach may be very effective to remove pain for one patient but may hurt the other. Using the knowledge gained from their assessment they can: 1. Remove the pain triggers; 2. Create the foundation for pain-free movement. The goal is to identify and follow an approach that is effective for them and their unique causes of discomfort.

**The Assessment**

Trying to diagnose painful back disorders based on anatomical structure alone is possible but difficult. But the only type of clinician who benefits from the tissue-based diagnosis (the type that comes from looking at X-rays, scans, and “poking around”) is the surgeon who is only looking to “cut the pain out”. The evidence shows that the mechanism of 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 through a series of simple diagnostic tests. A prevention plan is then designed to eliminate the specific causes – known as pain triggers (motions, postures and loads identified through provocative testing). The complete rehabilitation plan is then designed to enhance function while avoiding these triggers. By following this system, 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 find they possess very high load tolerance when the spine is not bent but rather the motion is transferred to the hip joints. 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”.

**Essential elements of function** (guy wires and mobility)

Certain loads on the spine are necessary and actually part of a maintaining a healthy back, but some are harmful and can, over time, accumulate damage. But each person is different in their reaction to loading which is governed by one’s biology, injury or training adaptation, genetics and rate of repair. The healthy pain-free back is achieved with the optimal amount of load – not too much or too little.

Proper muscle function is important to support a robust and pain-free back. Without the surrounding muscles, the spine would be rendered totally useless and would be incapable of supporting the weight of the upper body. Muscles are contracted in a coordinated manner that allow them to act similarly to guy wires, preventing the spine from buckling and giving way under high load levels. By stiffening and stabilizing the torso, these muscles allow movement to be propelled through the arms and legs. This stress free movement is only possible when there is a stiffened core and corresponding mobility at the shoulders and hips. Just like a dump truck or a race car, some parts are stiffened and some create motion to enable the desired ability specific to the task at hand. People often wonder which should be valued more when it comes to using the core to manage the human spine: stiffness or mobility. It turns out that both are needed. Your spine muscles are constantly tuning this stability/mobility interplay. This “sweet spot” is governed by a set of movement principles.

**What causes back disorders?**

While there are many causes of back disorders, the scientific literature evidence is strongest for several possible mechanical causes. Once the patient has experienced pain, and the nerve system is sensitized, how the person reacts to the pain is modulated by a host of variables that can increase or decrease the pain sensitivity. Biology, adaptation, size, and previous injury history all influence the reaction to load magnitude, repetition and duration. For example, the spinal discs have a fatigue life, in other words a limited number of bends that they can withstand before they become painful. The possibility for ease of motion between discs 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, and a patient’s routine and approach to training, among other factors. If, for example, an individual continues to bend a painful disc, by continuing 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 extended periods of sitting – here the spine (particularly the lowest lumbar discs) is flexion bent. Strangely, these flexion-intolerant patients are sometimes told to pull their knees to their chest to obtain relief. This motion activates the stretch receptors in the back extensor muscles, resulting in short term painlessness for about 15 minutes, but unbeknownst to the patient, this bending has caused further damage and/or sensitization of the underlying pain mechanism. While the patient may have found a “quick fix” or short-term cure, they are actually sensitizing their pain trigger and inviting additional pain attacks in the future. These types of stretches initiate a dangerous cycle, temporarily numbing pain while inciting continued long-term pain.

While these types of patients often find relief through frequent posture change, and even fast walking, they simply cannot tolerate sitting. Sitting posture can be assisted with lumbar support in the form of a small cushion to prevent the lumbar flexion trigger. 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 in which provocative testing and classification of the back pain sufferer results in better prevention and rehabilitation approaches than a classic rushed doctor’s appointment. There are many other sub-categories in which the specific strategies to avoid the cause and create a pain-free foundation will differ. By following a few rules for back health and function, a plan to build resilience to pain triggers is possible. Consider the specific movements used by athletes, construction workers, farmers etc. With an appropriately identified set of specific stressors, all of these individuals are able to modify these movements in order to eliminate the pain triggers and go about their required work in a more spine-sparing fashion. Like any other type of pain, the more the triggers themselves are avoided, the faster the sufferer will be able to desensitize their reaction to them altogether.

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

The typical orthopedic exam determines the range of spine motion, as well as 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. As an example of this, we published a study in which we tracked the progress of back pain patients who sought treatment in a pain clinic (Parks et al, 2003). What we found is that the scores obtained from the initial assessment had very little correlation with which patients actually experienced a full recovery 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 disorders. Imbalance in torso muscle endurance around the torso has also been shown to be predictive of future back disorders. Thus, correction of these asymmetries with corrective and therapeutic exercise should be the first stage of any rehabilitation program. Provocative testing, in other words, tests to intentionally provoke discomfort, is another essential element in determining which postures, motions, and loads are exacerbating of the pain and which ones are well tolerated. One such example of this type of testing involves having a pained patient sit upright on a stool and pull upright on the stool seat pan to compress the spine. Usually this shouldn’t cause any discomfort. Next, said patient would slouch, causing flexion through the spine, and repeat the pull. Should this cause pain, we have identified a flexion-intolerant patient; in other words activities that involve a forward slump utilizing poor posture can now be identified as pain triggers. I provide many examples of pain triggers such as extension intolerance or perhaps intolerance to specific muscle activation strategies in *“Back Mechanic”*. Avoidance of the pain trigger together with specific exercises can rebuild resilience and stamina for pain-free activities.

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

The occupational medical system does not always provide all involved parties with the necessary information to optimize pain-free movement and restoration of occupational work. 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 via two mechanisms: 1. Pain sensitivity is reduced by winding down central sensitization; 2. Allowing the tissue to heal/adapt.
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 (McGill, 2016).

**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 which patterns must be avoided. The testing 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” or degenerative disc disease - there are only those individuals who have not had a thorough assessment. There is a causal mechanism that can be identified as the direct cause of the vast majority of back pain. The traditional medical system approach based on 15 minute appointments provides no opportunity to show the patient the cause of their pains nor an appropriate guiding plan of effective ways to get rid of the cause and build pain-free movement. The book “***Back Mechanic***” is a step by step guide to empower the reader to become their own best advocate to get rid of their pain. Rich illustrations guide the step by step process. There is no such thing as a “one size fits all” approach that will work for all individuals. This book is about learning your unique triggers and how to avoid them, as well as a comprehensive guide to each set of corrective exercises that will adjust your movement patterns and rebuild your tolerance and strength. I am happy to say that the methods illustrated within this guide enable 95% of people who have been told they should consider surgery to avoid it. This guide is key for any individual looking to take control of their painful spine, and become their own health advocate. We are all capable of becoming our own Back Mechanic.



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