

The Simplicity of Low Back Pain

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Global peer-reviewed literature is increasingly acknowledging the failings of existing treatment paradigms to manage the growing economic and clinical burden of back pain symptoms.

Low back pain is the leading cause of disability worldwide and its prevalence continues to increase despite a staggering explosion of treatment options, some considered conventional and many less so. Invasive technology including interventional pain blocks and back pain surgery refinements are advancing exponentially in an attempt to effectively treat the often desperate needs of the millions of back pain sufferers that ultimately resign to surgical intervention once physical, pharmaceutical and maladaptive behavioural measures fail to control symptoms. Sadly many of these patients still continue to suffer unrelenting symptoms remaining lost, bewildered and as helpless as their medical or allied health professional.

Where have we gone wrong? O’ Sullivan’s “View Point” article in JOSPT titled “Unravelling the Complexity of Low Back Pain” highlights many valid obstructions to surmounting the problem of low back pain, in particular the misguided patho-anatomical and mechanical stability model that spinal motion segment degeneration or lack of core stability respectively is a cause for low back pain symptoms. Although many treatment strategies still target anatomical structures, be they surgical targets or physical conditioning targets, it is globally accepted that increasing core strength and replacing/fusing degenerate discs is not the magic bullet for low back pain symptoms. If this were the case, our rate of Failed Back Surgery (FBS) would not be so devastatingly high and our outcomes from Pilates and gym based core stability/motor control exercise programmes would not be so poor. Poorly efficacious rehabilitation should attract the label of Failed Rehabilitation Syndrome (FRS) in a similar way to Failed Back Pain Surgery Syndrome.

Cochrane data has demonstrated numerous failings and a lack of evidence for common physical therapy remedies of manual therapy, stretching, motor control therapy, Pilates, and gym based core strengthening, yet these disappointing results and methodologies are often praised, misleadingly interpreted as being beneficial when compared against doing nothing or minimal intervention. In other words a structured timely and costly physiotherapy guided rehabilitation program is unlikely to obtain significantly superior results to the back pain patient engaging in “walking” activity once a day (reference physio-microdiscectomy paper). Does this imply that walking is a superior therapy or that structured rehabilitation programmes are about as good as a walk, with neither effectively addressing the dilemma of persisting low back pain symptoms?

Ockam’s Razor

The title itself “Unravelling The Complexity of Low Back Pain” may well in fact elude to the very problem obstructing progress. Persistent nonspecific low back pain is clearly not a disease, although many patients and clinicians use the label nonspecific low back pain interchangeably. We wish to put forth and define the disease causing persistent low back pain symptoms that to date, peer reviewed literature has failed to provide. This current lack of disease definition drives the pseudo-complexity of back pain that other research has failed to conceptualise.

Our view point diverges significantly from others including O’Sullivan, with the critical question of low back pain aetiology, because all other research demonstrates a distinct lack of focus into establishing a definition of a root causation for persisting low back pain symptoms and the subsequent vast number of downstream pathoanatomical specific conditions that arise such as disc prolapse, stenosis, facet arthritis, enthesitis, sacroiliitis, mechanical instability and not to be discounted the mental health effects that require individualised symptom based treatment while root causation remains nebulous.

It is only when the disease causing low back pain symptoms is defined that the shroud of complexity relating to low back pain management will be lifted and simplified for success in the way that Ockam’s Principle describes managing complex problems by implementing upstream root cause simple solutions. In other words if we identify the disease causing low back pain and represent this as the first domino in a domino train of lumbar spine pain conditions then logically the target of therapy should be to prevent the first domino from falling.

We accept that all our patients will present with slightly varying and individual manifestations of the disease of low back pain symptoms. Some patients may have more central low back pain, some more somatic referred lower limb pain. Patients may have more or less core stability and degeneration on imaging. This should not distract us from the logic and common sense that if persistent low back pain symptoms are affecting millions of people and represent the leading cause of medical presentations, then a single disease rather than a multidimensional complex aetiology is to blame. We must manage

symptoms in conjunction with imperative reversal of the disease which is a central tenant of sound medical practice that unwittingly appears to have been overlooked in patients that present with persistent low back pain symptoms.

The Real Paradigm Shift

The vast multitude of available therapies for low back pain treatment lays claim to the fact that the most effective approach still remains elusive.

On close inspection of common widely available methodologies ranging from physical to cognitive, from invasive to passive, all approaches are distinctly lacking a focus on Functional Movement proficiency.

In order to develop a Functional Movement Therapy methodology we must address the domains that constitute Movement which include – the “hardware” elements of the musculoskeletal system comprising bones, muscles, tendons ligaments and joints as well as the “software” elements comprising of the control of Functional Movement which is purely a derivative of an uncorrupted Central Nervous System, generating Motor Patterns that manifest in movement proficiency.

Many existing methodologies will develop “hardware” strength and conditioning through the practice of exercise or physical training, but missing from all of the common approaches, regardless of the active and physical nature integrated into them, is a distinctive lack of focus on rehabilitating CNS Motor Patterns.

We have developed the term NeuroHAB to describe Functional Movement Therapy that maintains a unique and distinctive primary focus to rehabilitate the CNS motor patterns which manifest in movement dysfunction clearly observable to the astute and trained eye. The secondary consequence of movement dysfunction is reduced functional capacity, like walking with a stone in your shoe – you wont go far. Persistent back pain symptoms develop when the individual’s functional capacity falls below their functional demand. In clinical practice we observe this with patients, unknowingly but automatically employing compensatory maladaptations in an attempt to keep Functional Demand and Functional Capacity favourably balanced to avoid pain. With the positive feedback cycle active, of movement dysfunction causing more movement dysfunction – like weeds in your lawn, the compromised functional capacity very often falls below even the simple functional demands of activities of daily living. This movement dysfunction model simplifies and unravels the puzzling pseudo-complexity associated with the incomprehensible prevalence of low back pain in our industrialised society.

Defining the Disease – Movement Dysfunction

We postulate that common to the vast majority of chronic non specific low back pain is Movement Dysfunction. The primary driver of this is modern industrialised lifestyle. The result of unchecked movement dysfunction is a vicious cycle of movement dysfunction with the eventual onset of pain accelerating and entrenching the cycle further.

A logical approach to managing persistent LBP must therefore incorporate specific and distinctive CNS motor pattern rehabilitation which represents Movement Therapy or “NeuroHAB” in conjunction with symptom control accepting that the symptoms of low back pain are secondary to the disease of Movement Dysfunction. This represents a real paradigm shift approach.

Mechanisms by which Movement Dysfunction may contribute to persistent low back pain symptoms include both mechanical and central processes. The mechanical process involves the transformation of normal non-nociceptive degenerative elements of the lumbar spine into active nociceptors. We have termed this transformation “degeneritis” as distinctive from normal pain-free degeneration. We also postulate a central process too that may shed light on chronic disabling back pain in the presence of normal spinal integrity. The presence of poor functional capacity with persisting Movement Dysfunction itself may behave as “physiological nociceptor”, in contrast to a structural nociceptive stimulus such joint inflammation, manifesting with similar obligatory cautionary central nervous system signals perceived as pain. A chronic physiological nociceptor of Movement Dysfunction in combination with manual therapies that give rise to further afferent sensitizing stimuli in the region of the back may well be contributory to the physiological phenomenon of Central Sensitization which in our view represents a second definable disease. A disease that mandates distinctive neurophysiological treatment. Analogous to the way smoking causes emphysema initially and then lung cancer as a second disease requiring adjunctive distinctive therapy.

We lay claim to the term “paradigm shift” because although many authors have described the need for a “change” of approach to managing the growing problem of persistent low back pain there has been negligible research into specifically targeting and defining movement points of performance that

constitute Movement Proficiency that, if actioned would restore motor patterns and reverse the disease of Movement Dysfunction in relation to LBP.

The benefits of reversing the concept of a disease of Movement Dysfunction needs to be qualified with the understanding that regaining default proficient movement is not expected to immediately allow one to restore pre-existing functional capacity due to inherent long-standing deconditioning of the hardware elements eluded to earlier. However, over time, improvement in strength and conditioning of those elements and associated Functional Capacity would be unavoidable fringe benefits that are derived when NeuroHAB is the primary therapeutic focus. Persistent back pain resolves when Functional Capacity rises above Functional demand and the maladaptive pain responses of central sensitisation unwind with constant proficient movement skills.

NeuroHAB Movement Points of Performance

1. Hip centric rotation
2. Neutral spine maintenance
3. Post kinetic chain activation
4. Unloaded knees (avoid anterior knee drive with deactivated posterior chain)
5. Proficiency limited range of motion.

These criteria for proficient movement are chosen because they represent the points of performance of a healthy spine naturally maintaining powerful functional human movement regardless of age, be they a squatting toddler, an Olympic weightlifting champion or a pain-free and independently functioning elder.

Functional capacity, of course, is vastly different for all individuals however motor patterns and virtuosity in executing spino-pelvic movement according to these criteria should be identical and be able to be maintained throughout life if low back pain is to be avoided. NeuroHAB movement points of performance maintain the loaded spinal integrity in a neutral position and by default activate and condition the posterior kinetic chain during all movement activities of living. We believe this to be a constant requirement for lifelong pain-free spine health that meets the changing functional demand of the individual throughout life.

Treating the disease of Movement Dysfunction – Prospective Data.

Since 2012, over 300 patients with persistent LBP of greater than 6 months, living in metropolitan Queensland Australia who had failed conventional primary and/or secondary care were subsequently referred to and assessed by a single spinal neurosurgeon. They commenced an 8 week – 16 x 1-hour sessions of specific and distinctive NeuroHAB Movement Therapy if they were assessed as non-surgical candidates. Patients were biased toward intervention failure because of these inclusion criteria, reflected in the very high presenting Oswestry Disability Index (ODI). Patients were not excluded based on age, gender or commencement pain or disability. They were representative of specialist adult spinal surgery practice. ODI data was collected prospectively on all patients before and after completion of Movement Therapy with specific and distinctive goals of movement proficiency described by NeuroHAB Movement Points of Performance. All patients displayed corrupted movement based on the same NeuroHAB criteria at the commencement of NeuroHAB Movement Therapy. The average ODI score of the subjects before the commencement was 32, reducing to 16 at completion. All subjects were able to demonstrate dramatic reversal of movement dysfunction and maintenance of default NeuroHAB Movement Proficiency at completion. The NeuroHAB program was supervised by Movement Therapists, comprising of Physiotherapists, Exercise Physiologist, Exercise Scientist, Registered Nurse and Personal Trainers specifically trained by the lead author with skills to deliver the NeuroHAB program.

(before / after / change)			
Average	31.7	16.2	15.5
Median	28	16	13

Conclusion

Without addressing causation and repetitive, isolated therapeutic targeting of the “hardware” and related downstream symptoms, long term success in controlling low back pain will be elusive and there will be a stagnation in effective treatment outcomes. The prevalence and huge economic burden will continue to escalate as the modern industrialized lifestyle and the domestic cage it represents actively drives Movement Dysfunction. Clearly by defining a disease and Movement Points of Performance is a paradigm shift in the right direction as it opens the window of opportunity for specific research into addressing and restoring Movement Proficiency as the primary therapeutic target to eliminate the disease of Movement Dysfunction causing the symptoms of low back pain. The first ever published analysis of prospectively collected data directly reflecting restoration of NeuroHAB Movement Proficiency strongly supports this conceptual paradigm shift.

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