

An Interview with Dr. Lorimer Moseley: A Body and Mind Approach
to Chronic Pain Research and Management

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After a hip injury and subsequent surgery, I found myself still battling chronic pain years later, even though I was diligent with my physical therapy, practiced progressive relaxation and imagery, had a positive attitude and outlook, and was mindful of my movement; in my view I was doing everything right to facilitate recovery and become pain-free. But I still had pain every day, sometimes debilitating pain. I wasn't engaging in activities and life the way I wanted to. I couldn't figure out the way forward. But then something happened. I became familiar with Professor Lorimer Moseley's pain research and writings during the course of my schoolwork in Human Movement and soon after had a breakthrough, finally feeling like I got a handle on how to manage my pain experience and live my life again. Because of the impact his work has had on me and because of how powerful I believe his philosophy and ideas will be in helping people around the world with chronic pain, I reached out to Dr. Moseley to see if he would agree to an interview. To my delight, he agreed.

Dr. Moseley teaches neuroscience and is the Chair of Physiotherapy at the University of Southern Australia, and is also the lead scientist of The Body and Mind (BIM) organization, a collaborative research group studying the role of the brain and mind in the human experience of chronic pain. It is the extensive work Dr. Moseley has done in pain education and the efforts he has made to shift the concept of pain from one of pain as an indicator of damage to one of pain as an indicator of protection, that I believe profoundly changed things for me. I went from being a person suffering from chronic pain to just being a person; pain no longer defined me. Through the process of my own pain experience, combined with my scholarly research, I began to understand how complex and individual the human experience of chronic pain is and how powerful pain education and the reconceptualization of pain are when it comes to successfully managing chronic pain and living a full

life. I wholly agree with Dr. Moseley when he says that “the key to overcoming pain is understanding it”.

Therein lies the crux of the matter, though. What is pain? How do we define it? How do we begin to understand it? How do we extend that understanding to pain sufferers? We all know that chronic pain is a global problem and that it is a huge drain on the economy, with skyrocketing healthcare costs, lost productivity, rising levels of disability that result from the sociological, psychological, and physical ramifications of being in chronic pain, and, most importantly from my point of view, the diminished quality of life that many people in pain experience. And there is no consensus in the clinical and research communities on how to deal with the problem; often the healthcare professionals who patients turn to for help with their pain don't have adequate answers and aren't able to recommend successful therapies. That's where the work of Dr. Moseley and his team come in; I truly believe that the work they're doing in the pain science field can change the way we collectively think about pain, thereby changing our pain experiences, and profoundly impact the way we approach the diagnosis, treatment, and management of chronic pain conditions. Once you understand it, it seems simple, a no-brainer. So the key is getting people to understand it, clinicians, researchers, scientists, healthcare providers, mental health professionals, exercise specialists, students, the general public, social workers, and local, state and federal officials, so they can effectively help their patients, clients, constituents, friends, and loved ones who are dealing with chronic pain. And likely even help themselves.

When asked for a quick definition, Dr. Moseley described pain as “an unpleasant feeling felt somewhere in the body that makes you want to stop it in a hurry”, with an emphasis on the idea that pain is felt somewhere in particular in the body and that the pain sufferer feels compelled to remove it. This definition makes it apparent just how personal and subjective the experience of pain is, how there is no universal way to feel, explain, diagnose, treat, or manage chronic pain. This is where it becomes not-so-simple, and is why Dr. Moseley's first-person neuroscience, mind-body approach to

chronic pain research and treatment is so refreshing and so necessary. In his research, Dr. Moseley tries to understand the very subjective, almost philosophical, human experience of pain, an approach that runs counter to most empirical and clinical research in the pain science field.

The unique approach taken by Dr. Moseley in pain research and treatment may have a lot to do with how he became involved in pain research to begin with. He was a professional soccer player before his entry into the world of physiotherapy and neuroscience and suffered a career-ending injury after an overhead kick landed him on a sprinkler on his back. After continuing to have pain for the next six years, he decided it was time to go back to school. It was during his graduate school education that Dr. Moseley really started to question what is going on when people experience chronic pain; there was conflicting information between what he was learning in his biological sciences classes and what he was seeing during his therapeutic, clinical training. It was eye-opening and frustrating; he felt that the more he learned academically in the classroom and the more he learned from working with patients in the field, and not being able to help them, the more he realized that “jeeppers, we’ve got no idea what we’re doing”.

Dr. Moseley worked with elite, Olympic-level athletes at this time. Athletes who were vastly superior to the normal population in terms of biomechanics, anthropometrics, and physiological makeup, yet they had chronic pain that couldn’t be explained by the “experts”. And he’d also see people who were a mess in comparison, who broke all of the biomechanical rules, who were average or below average anthropometrically, who were not athletes or good movers, yet they had no pain. This disconnect between the science of pain and what the body seems to be doing from the sensation of pain and what people were feeling mystified Dr. Moseley, a person who describes himself as an “explorer by nature” and someone profoundly interested in humans, and this mystification and fascination is what set him on a career path into the human experience of pain, a topic that was at “the same time very resonant...from a personal perspective” for him.

In his writings, Dr. Moseley has made it clear that pain is an intimately personal thing and that we cannot feel other people's pain. But despite pain being deeply personal, it is also universal, everyone, with very few exceptions, experiences pain. So why do we, as humans, experience pain? The simple answer is survival. Dr. Moseley believes that biology is not purpose driven, but is rather consequence driven. According to Dr. Moseley, "to have pain and to have the sophisticated collection of qualia that we have with our pain is an incredibly advantageous evolutionary quirk...that protects us better than anything else and in an anatomically defined way... I think that fear is probably our best protector". As with other survival drivers, such as thirst, hunger, and lust, pain can become problematic when it is no longer driving survival and is instead being driven "by something that is an illusion". That's the kicker, much of what we think we know about chronic pain just plain isn't accurate; it's an illusion. Pain is not an indicator of biological insult, as we've been conditioned to believe; rather it is an informant of protection and the brain's evaluation of the need to protect, often accompanied by an outsized, exaggerated response as a result.

This is where Dr. Moseley's work starts to get really interesting, and starts to make a whole lot of sense. His insights into the experience of pain help one gain a much better understanding of pain, a series of "a-ha" moments that transform the way you think about, react to, and subsequently experience and manage pain symptoms. As previously mentioned, Dr. Moseley describes pain as being intimately personal; it becomes an essential aspect of what it's like to be the person who is in pain, as it did for him and as it did for me. Because we cannot feel others' pain, we must rely on people who are in pain to tell us about it. Through pain sufferers' explanations of their pain, it is possible to start developing associations that allow us to predict when people are in pain by recognizing common cues. These collective common cues are also the result of a lifetime of associative learning that contributes to how we experience pain; associations of seeing damage, feeling pain, and sensibly concluding "this is the pain that is being delivered". As I now understand it, physiological insult is not necessary for pain and is even likely to be absent, especially in chronic

or persistent pain. Dr. Moseley and his research team are trying to deliver the simple message to everyone they can “that pain is not nociception; pain is a measure of the implicitly perceived threat to body”. He quotes Dr. Donald Martin’s assertion that “nociception is neither sufficient nor necessary for pain” and describes humans’ evolutionary sophistication in how we can interpret any credible evidence that tissue is in danger, such as by viewing an MRI image of a bulging disc or seeing our physician frown as they report our test results or hear a gasp from our parent when we fall and skin our knee, as a threat, a need for protection, and therefore experience a sensation of pain in response; it hurts just a bit more (or starts to hurt when it didn’t before!) because it’s *supposed* to. As indicated earlier, fear is our best protector and if we are made to think there is danger to our neck, such as by an MRI or a taciturn doctor or a freaked out parent, it stands to reason that it will hurt a bit more because that is our body’s best mechanism to protect itself against threats and survive to see another day.

So that’s the big idea: pain is not an indicator of an insult to biological tissue, as is traditionally believed by the lay public, many healthcare providers, and perhaps a good chunk of pain researchers as well. Rather, pain is an indicator of threat and the need for protection. It wouldn’t make evolutionary sense for pain to be literal, as Dr. Moseley explains, because by the time pain was experienced it would be too late, the damage would already be done. But pain as a protective mechanism does make evolutionary sense; an indicator that precautionary measures may be necessary to *prevent* tissue damage and harm to the organism from occurring, to protect and preserve the self. This is a pretty profound shift in our way of viewing chronic pain, essentially severing the relationship between nociception and pain. Once we understand that pain does not equal damage, it also allows for a profound shift in our responses to our pain.

This leads us back to Dr. Moseley’s assertion that “the key to successfully overcoming pain is understanding it. Because once you understand it, then it’s intuitively sensible to, you know, push, nudge the pain a bit more because you know the pain is not an accurate indication of damage, it’s an

overprotective response”. He speaks of the importance of people respecting their pain without being afraid of it and a good deal of that comes from basic understanding. In general, understanding something previously unknown or unfamiliar is a powerful means of removing fear and uncertainty. By changing the meaning of a pain signal from one of damage to one of protection, some of the fear is removed (no one wants to cause themselves if they can avoid it) and pain sufferers can begin to manage or eradicate their pain symptoms while still living their lives, by pushing their pain a bit more. But how do you help people in pain (or who treat pain) to make this conceptual shift? Dr. Moseley and his research team have had a great deal of success in this regard through the use of pain stories and metaphors. He got self-conscious about his book when I asked what one piece of advice he’d give to pain sufferers (I specifically asked if reading his book would be his recommendation), but I truly believe that reading his book would do profound things for many people in pain. It has been demonstrated through his work that by simply providing patients with a book of short stories that explain key concepts in pain biology through the use of metaphors, patients make huge advances in a very short period of time in their pain beliefs and attitudes which are accompanied by measurable shifts in their pain knowledge and pain-related catastrophizing.

This change in mindset leads to improvements in patients’ ability to move and to function, to nudge their pain a little bit more, engage in life a bit more, and enjoy life a bit more. While the mechanisms underlying the improvements seen after explaining pain are not really understood, Dr. Moseley thinks that “explaining pain shifts the evaluation of sensory and other inputs that imply danger”. As an example, “if the brain thought there truly was no danger in a limb, even though this is in contrast to the ongoing nociceptive input, then it won’t hurt. We see this in people with amputation but no phantom limb pain.” So it stands to reason that for people with chronic low-back pain, once they understand that there is no danger to the low-back, it won’t hurt (or won’t hurt as much or won’t prevent them from engaging in life). Same for the person with the bulging disc on their MRI; if they understand the bulging disc does not equal danger (and therefore cause fear), rather means there is a

need for some therapy, the neck may not hurt as much and the patient may feel more comfortable moving, performing physical therapy, and engaging in the necessary activities that will help resolve the bulging disc issues. Oftentimes, persistent and chronic pain are exacerbated by this fear-driven overprotection which leads to decreased movement, increased levels of disability, and diminished quality of life that become a vicious downward cycle of pain and deterioration.

So how do we facilitate this change in mindset? How do we jump start a cycle of pain management, increased movement, decreased disability, and generate a cycle of health and happiness? As mentioned before, pain is complex and hard to understand; especially when you're already in pain and your mental and physical capacities are altered (there are distinct changes that take place in the brain when a person suffers from persistent pain. Luckily, there is some evidence that when pain improves, cortical abnormalities lessen as well). That's why I think it is genius to use metaphors to achieve this necessary reconceptualization of pain. Metaphors are ways for us to organize and assimilate new information in a way that can be related to previously understood and accepted information. Metaphors are an apt vehicle for education and, more importantly, understanding; particularly for a topic as complex as pain biology. Dr. Moseley describes stories, such as metaphors, parables, myths, legends, and nursery rhymes, as the cornerstone of history, with "a tried and true track record of passing on and shifting knowledge". We are all familiar with stories presented in this way, having been exposed to them from our earliest days as infants, throughout childhood, and into adulthood. So it makes sense that when pain is explained in such a familiar, comfortable manner, it leads to greater understanding, acceptance, and substantially better treatment outcomes, almost no matter what modality of therapy is implemented (for example cognitive-behavioral training or physical therapy).

It seems so obvious that by simply providing pain education as a part of the rehabilitation process, therapeutic outcomes will be much more successful and sustainable, yet it's not a part of most traditional rehabilitation models. I asked Dr. Moseley why he thought this was and how we

could change it. While he believes there are more powerful drivers in the United States to keep things as they are than in other countries, he does think that it's changing, however slowly. Though it seems like a simple thing to provide pain education and to shift the concept of pain, it is equally simple, and perhaps more so, to stick with the traditional conceptual framework of pain: pain as an informant of damage is a very simple, intuitive (though illusory) model whereas pain as an informant of threat and the brain's evaluation of the need to protect is a bit more complicated, thus harder to integrate.

Further complicating the integration of a reconception of pain into rehabilitation models lies within the psychosocial factors that influence the therapists themselves. As Dr. Moseley astutely pointed out, for any professional that loves their job, as many in the realm of pain treatment do, their identity is somewhat wedded to their profession. As such, the idea of a practitioner being told "you know, you might be effective for reasons you haven't thought of yet" or "manual therapy probably has most of its effect because of some sort of psychological interaction" can be seen as really confronting and interpreted (not necessarily consciously) as a threat to their whole identity. Therefore the idea is reflexively rejected. Dr. Moseley doesn't cast judgment on the rejecters, but he does try to educate the rejecters, and everyone else for that matter. What he and his research group have been trying to do for the last 15 years is "to suggest that pain is an informant of threat and the brain's evaluation of the need to protect. Which is subtly but significantly different from pain is a measure of tissue damage or tissue state." For Dr. Moseley, who has been immersed in it for so long, it's such a no-brainer; it's so simple and straight forward. But he acknowledges that "getting real buy-in on that model is terrifically difficult. But less difficult than it was 10 years ago, for sure". So there is hope.

While this may not yet be evident in the rehabilitation training in the U.S., yet, throughout other parts of the world rehabilitation training does have pain science embedded in it from quite an early stage. For example, where Dr. Moseley works, at the University of South Australia, their physiotherapy graduates complete approximately 150 hours of pain science, delivered through a

biologically accurate and current field of view, before graduation. Once these students enter the clinical arena they almost universally express appreciation of this pain training; what they describe as wisdom but what Dr. Moseley describes as “just accurate, essential frameworks about pain”. And it’s not just graduate students who are being educated in pain science in Australia: Dr. Moseley’s team also educates students, clinicians, the judiciary, the motor accident commission, the work cover (which I believe is akin to our worker’s compensation programs), the public, industry-- essentially anyone who at all deals with the welfare of people. This is a critical point as people in pain are encountered in all aspects of life, school, and business. The more education and resources that are out there, not just for the practitioners but for the public as well, the better our collective understanding of pain will be and the more effectively we can manage the impacts of chronic pain on the individual, their families, and their communities.

To effectively manage chronic pain, more than just pain education is necessary, though (although I believe it must be the first step!). I asked Dr. Moseley what team of professionals would make up his “Rehabilitation Dream Team”. As expected, there is no one team that would be effective because each individual will have different contributors to their pain. Those person-specific contributors would dictate who would be on the team for each individual. For example, for people whose primary pain contributor is an injury to the peripheral nervous system, a prescribing clinician who really understands how the drugs they’re prescribing work and how patients can be weaned off them would be on the team. However, if there is no ongoing neural damage in the peripheral system but there are other tissue-based drivers contributing to the patient’s pain, the team would need to include someone who understands physiology, anatomy, and biomechanics. But rather than the rule, these two examples are actually more of an exception, which is counter to what is presently most common in the US (it seems as if prescribing medication is typically the first line of treatment, with physical therapy a close second). There are also pain cases where depression, anxiety, stress, and

major cognitive distortions are the primary contributors to pain, in these cases a good psychologist would be necessary. For people who have inflammatory joint conditions, a good rheumatologist would be a part of the team.

In Dr. Moseley's estimation, though, most people in chronic pain are more likely to have primary contributors that are in the behavioral, psychosocial, and cognitive realm. To most effectively target these contributors, a practitioner who gets under the patient's radar of "I don't need a shrink" will be the most effective, such as physiotherapists and exercise specialists and others in the field of human movement. As such, he believes it is critical for people who have the license to touch and to make statements on body to really understand pain and go through extensive pain training, akin to that provided in Australia. Physical therapy education programs are a bit different in Australia compared to the U.S., with much higher qualifications in pain medicine or pain science. In Australia, physical therapists are first-contact practitioners and so are well placed to provide pain treatment to patients as they are relatively cheap compared to physicians and psychologists. Also, in Australia physiotherapy programs are only open to the top 2-3% of graduates, similar to medical school students. According to Dr. Moseley, though, anyone with pain training can become a pain specialist, including psychologists or good exercise and human movement professionals. It is apparent that general practitioners (GPs) don't have the time or capacity to add pain triage to their clinical practice. GPs typically have four-minute appointments with their patients; it is impossible to decipher someone in chronic pain in 4 minutes, therefore other professionals are needed to effectively fill this role.

As further evidence that things are indeed changing many countries, such as the United Kingdom and the Netherlands, are trying to set up primary care, pain triage systems that appropriately allocate health resources to patients in pain. At the University of South Australia they are doing a study where patients that have been referred to surgery by their general practitioner (GP)

are intercepted and triaged. In these cases, the patient is usually referred to surgery “because they satisfy that particular GPs ideas of what needs surgery, which is often not at all backed by evidence nor the guidelines” and they are finding that fully 85% of them don’t need surgery at all; something they may have otherwise waiting 8-9 months to learn as they awaited their appointment with their surgeon. Such interception and triage is saving a great deal of time and money: a “terrific investment” in Dr. Moseley’s word. Not only do these individuals not need surgery, whatever the condition was that led to the referral in the first place can now be adequately referred out and treated so that no deterioration in their condition takes place over that 8-9 month waiting period. Instead, these triaged pain patients are told “you don’t need surgery; you need to get moving, respect it, understand it”. Oh, how I wish I heard those words before my own surgery!

It’s important to point out, although it hasn’t been stressed in this paper thus far, that the “get moving” part of the pain rehabilitation equation is a crucial variable for full recovery. All of the pain education and understanding we have been talking about is in place to facilitate the return of function, physical activity, and active engagement with life. In the extant literature, it has been consistently demonstrated that physical activity is beneficial in terms of pain management. The types of physical activity range from mindful-based movement practices such as yoga and Tai Chi to strength training to water aerobics so it doesn’t seem to matter what type of physical activity is a part of the therapy, just that physical activity *is* a part of the therapy. When asked if he had a preferred movement modality for pain rehabilitation, Dr. Moseley responded “do stuff”. He made sure to point out that you can’t just prescribe “doing stuff” but the point was that any form of physical activity that plays to the strengths and interests of the person in pain and that is informed and guided by a coach or clinician educated in movement and modern biology will be beneficial. There is no one superior model to another. The key is to just move. To do stuff. To respect the pain but also understand that it is an exaggerated response that can be nudged or pushed a bit further; that there need not be fear of

being active and engaging in activities that bring you joy and health. For me, the removal of fear that I had in association with my chronic pain, fear that I would further damage my hip with the slightest wrong movement, was incredibly freeing and allowed for me to engage in life again.

When I shared with Dr. Moseley that I thought it was a shift in my own concept of pain and my improved understanding of pain as a result of becoming familiar with his work is what finally led to my own breakthrough in successfully managing my pain and getting me back into the physical activities that I enjoy most, like snowboarding and yoga, he countered with some interesting observations that I felt were pretty profound, so I'm including the quote in its entirety:

Understanding of this from the place from which you've come, you need a lot of courage.

And you need a lot of personal skills that no one else could have delivered to you. You know, you've got to construct those skills and have that courage and have the people around you. I say to all the people in pain I deal with that 'you have to be brave, you have to be patient and persistent, and you have to associate yourself with the people who facilitate that, not with the people who are a barrier to that'. And so I agree that understanding is critical, but the vehicles on which understanding can be transported to recovery are really the stuff of: to love and be loved. To loving yourself and loving others and all that sort of stuff.

To me, this was beautiful in its simplicity while also showing how incredibly complex the experience of pain is. It's not enough to just learn about pain, or to just have social support, or to just have the motivation and drive to want to get better, or to just do physical therapy. There is an underlying element to all of the biopsychosocial factors that play a role in the experience of pain and successful management of pain that is much harder to quantify or measure or teach. When I asked Dr. Moseley about the one thing he would want a person in chronic pain to know, he gave the previously discussed answer that understanding pain is the key to overcoming it, to respect pain but not to fear it. But he also added a bonus, more neurophilosophical, answer: "to love and be loved".

He described “to love and be loved” as a sensible approach to all aspects of life and across all expressions of our humanity, from movement to lovemaking, because it brings with it not a sense of hopelessness or passivity, but rather a sense of the active, a sense of being in control and of managing your own resources, and a sense of understanding. This reminds me of the concept of self-efficacy and the elements of self-determination theory and, to me, is incredibly powerful in its emphasis on self-reflection and self-awareness. Self-reflection, self-awareness, love; these really are the true foundations of learning, understanding, sharing, growth, happiness, purpose, fulfillment. Life.

Indeed, pain is a complex condition, but the solution may be simple: to love and be loved, to respect and to understand, to move. But simple does not mean easy. These are not easy ideas to put in neat little boxes and deliver to the masses. But we have an opening, a place to start shifting the way we think about and manage pain at an accessible, more familiar level and that is with pain education. We need to get out the simple message that pain is not nociception; rather pain is a measure of the implicitly perceived threat to body. We need to foster acceptance amongst the educators and the healers and the sufferers that pain is a truly a biopsychosocial phenomenon. We can start the dialog through stories and metaphors and bolster the discussion with research and clinical evidence. Dr. Moseley and I agreed during the interview that “if we can shift the concept of pain, we know we can shift a whole bunch of stuff”. So that’s where we need to start. Once we shift the concept of pain, it may open the door to shifting other concepts that are hindering our collective ability to flourish in our mental, physical, and spiritual health.

Dr. Moseley’s call to action is for us to undertake what he calls “Mass Conceptual Change”. I intend to answer the call.