

## Stress and Anxiety: Drivers of Poor Workers' Compensation Outcomes

*Brian Murphy, PT, DPT, OCS, COMT—Vice President of Employer Solutions, Upstream Rehabilitation, Nashville, TN*

*Christopher Scoma, PT, DPT, OCS, COMT—Director of Workers' Compensation Quality and Education, Upstream Rehabilitation, Nashville, TN*

### INTRODUCTION

For physical therapists and other healthcare professionals working with the workers' compensation population, it is well known that patients being provided care through this model generally take longer to return to work, and return to their preinjury levels of employment at an overall lower rate,<sup>1</sup> when compared to other patient demographics. A common assumption is that secondary gain issues are the primary driver for these poor results. While this is a factor that needs to be considered, there are also many other elements that can drive poor outcomes. These additional considerations must be understood by all stakeholders, as they may impact the successful management of workers' compensation patients. By educating healthcare providers, payers, and employers on potential complicating factors, strategies to mitigate their effects can be implemented by all, and therefore allow us to best serve this patient population.

As injured workers can be a particularly vulnerable patient population, these risk factors should be identified and addressed early when managing their care. Some of these factors are modifiable and others are not. Low educational level, poor job satisfaction, and negative financial impact have all been linked as contributors to poorer outcomes.<sup>2</sup> While these are variables that healthcare providers cannot necessarily influence, it is important to be aware of common risks that negatively influence return to work outcomes in the workers' compensation patient population. For example, one study found that 54% of injured workers whose main income was workers' compensation were experiencing substantial financial stress.<sup>3</sup> This source of stress to an injured worker is harmful to their rehabilitation and return-to-work prospects.

While these variables should be understood by healthcare providers, the focus of today's discussion will address modifiable factors. For example, there is an abundance of data making practical recommendations in regards to nutrition and hydration being able to help reduce surgical complications, minimize muscle loss during periods of immobilization, and maximize return to function.<sup>4</sup> Additionally, getting the appropriate amount of sleep is also a widely overlooked and a valuable component of proper healing.<sup>5</sup> Finally, addressing mental health and wellness (particularly by managing stress and anxiety) has been shown to improve outcomes while reducing the overall cost of the medical claim.<sup>6</sup>

### STRESS AND ANXIETY – THE PHYSIOLOGIC IMPACT TO THE INJURED WORKER

Stress and anxiety are often perceived as a mental health condition. While it is true that this experience is brain driven, it is important to understand that what the brain perceives as “real”,

in this case a stressful experience, results in physical sequelae. By understanding the body's physiologic responses to stress, the healthcare provider can educate their patients, particularly injured workers (as this group is more prone to a stressful rehabilitation process<sup>7</sup>) and therefore allow them to better manage the negative consequences. Stress impacts multiple body systems, and does so in a fashion that ultimately delays healing. Systems impacted include the sympathetic nervous system, endocrine system, immune system, and musculoskeletal systems. The sympathetic nervous system, or our “fight or flight system,” responds strongly to our thoughts, beliefs, perceptions, moods, and memories.<sup>8</sup> Stress stimulates the sympathetic nervous system response that responds by releasing adrenaline. This adrenaline release, while not capable of causing pain independently, can promote a sensitized state within healing tissue, and therefore facilitate ongoing pain.<sup>9</sup>

To complicate matters further, sustained stimulation of the sympathetic nervous system is also going to negatively impact sleep, tissue healing rates, and digestion, all of which can delay functional improvements. The facilitation of the sympathetic nervous system also promotes activation of larger, torque producing muscles in our body while inhibiting smaller, stabilizer muscles. By doing so, even the musculoskeletal system is impacted by stress. This can be problematic as these smaller stabilizer muscles are often critical to activating and retraining as part of a recovery program.

Stress can also influence the endocrine system, causing the release of adrenocorticotropic hormone from the pituitary gland. Adrenocorticotropic hormone prompts the release of cortisol from the adrenal gland. Cortisol works in our body as a protective mechanism, activating some systems, while slowing others not integral for survival. Tissue healing is one such process that is slowed, or put on hold altogether, when cortisol is released into the bloodstream. In addition to slowing tissue healing, cortisol has also been demonstrated to facilitate poorer quality of healing, loss of memory, depression, despair, and a decline in physical performance.<sup>8</sup>

Finally, the body's chemical response to stress (adrenaline and cortisol) also has an impact on the immune system, spurring the release of pro-inflammatory cytokines that can negatively impact healing. Furthermore, these cytokines promote an inflammatory state, which can facilitate increases in pain (as peripheral nerves can be particularly reactive to proinflammatory cytokines<sup>8</sup>). In summary, stress can create a negative physiologic impact on multiple systems of our bodies. This can negatively impact the healing process following an injury, and subsequently delay return to work. Employers, payers, and healthcare practitioners should be doing everything within their power to reduce stress in injured workers as this will facilitate a timely recovery and improved tissue healing.

### FIRST LINE OF DEFENSE – EMPLOYER EMPATHY

So, what can be done by employers to mitigate some of the factors that contribute to the anxiety and stress of injured workers? Step one should be to practice empathy. Employers that do this, and put their employees first in terms of priorities, gain trust and confidence from their team. This results in greater employee engagement and motivation, and has been shown to decrease overall costs associated with an injury.<sup>6</sup> Timeliness are also very impor-

tant. Engaging the injured worker early boosts resilience that can help improve recovery while reducing costs associated with the claim.<sup>7</sup> Employers must learn about the unique concerns of each individual injured worker. By doing this, they can address misconceptions, provide guidance on next steps, ensure the employee has a point of contact for questions, and set expectations as the injured worker moves through the workers' compensation system. Evidence has shown that positive outcomes depend highly on the company's value system, as in whether the company views the injured worker more as an asset or a liability. Making the injured worker feel like they are an important part of the organization and they are being supported has been demonstrated to have a positive impact on outcomes.<sup>10</sup>

Unfortunately, this "employee first" approach is not ubiquitous among employers/payers, and it has negative consequences. In a 2015 article in the *Journal of Occupational Rehabilitation*, Kilgour et al concluded that "involvement in compensation systems contribute to poorer outcomes for claimants. Interactions between insurers and injured workers were interwoven in cyclical and pathogenic relationships, which influence the development of secondary injury in the form of psychosocial consequences instead of fostering recovery of injured workers."<sup>11(p160)</sup>

This Kilgour research article referenced above highlights that by simply being involved in the workers compensation system, and that by interacting with stakeholders, typically in the hopes of facilitating claims resolution, that outcomes are being negatively impacted. Imagine if this were true in the therapy realm; ie, patients referred for therapy services demonstrated worse outcomes than non-therapy counterparts. It is likely referrals would stop, as payers would note the lack of value in the services provided. Yet, in this case, it is the payer and the employer negatively impacting outcomes, and ultimately, they cannot remove themselves from the equation. So, what can be done? Employers and payers alike must learn to demonstrate empathy to all injured workers, and commit to communication early and frequently throughout the claims process. Additionally, reassurance should be provided that the injured worker is a valuable member of the organization and that helping them heal after injury is important. As discussed in the paragraphs above, employers that adhere to these guidelines have experienced more positive workers' compensation outcomes.

## THE ROLE OF THE PHYSICAL THERAPIST

In addition to actions that employers and payers can take to minimize factors leading to stress for injured workers, healthcare professionals can also play an important role. Physical therapists, due to their expertise and the substantial amount of time they spend with patients, are well suited to address multiple risk factors for stress. While exercise can certainly assist in managing stress, physical therapists can also leverage their clinical knowledge to educate injured workers in other strategies to reduce their stress. Educating patients on diagnostic imaging, relaxation techniques, sleep hygiene, and the body's normal healing process can all be crucial to helping the injured worker better understand their injury, as well as decrease stress and anxiety. Please reference **Figure 1** for some "icebreaker" questions to implement in your own clinical practice. These questions, and their subsequent responses, will not only provide insight into the injured worker's mental status, but foster opportunities for education (referencing the content below).

## Figure 1. Breaking the Ice - Questions to Initiate Conversations

- What concerns you most about your injury?
- From your point of view, describe your injury to me? What tissue is involved, what do you perceive as the potential outcome, etc.?
- Has your employer been supportive during your recovery?
- Do you understand how the worker's compensation system works? Do you know who to contact with questions?
- Has your injury contributed to additional stress in your life?
- I noticed you mentioned your MRI diagnosis. Has anyone consulted with you regarding the findings?
- While it may sound unconventional, have you ever tried meditation or mindfulness as a way of managing your symptoms?
- Is your injury impacting restful sleep? How much sleep would you estimate you get each night?

## Physical Exam Guides Treatment Interventions

When patients are given a grim diagnosis based solely on the results of diagnostic imaging, it can be crippling to the outcome of any musculoskeletal injury, and particularly so in a workers' compensation claim. Evidence has shown that medical imaging should only be performed to confirm a serious pathology after a thorough examination.<sup>12</sup> Unfortunately, this is not always how healthcare providers practice, and as a result many injured workers are given a diagnosis primarily based on the results of diagnostic imaging. How does this approach negatively impact rehabilitation? These "diagnoses" are often mentally anchored within the patient as the source of their pain and dysfunction, and it is often assumed that without direct intervention of these diagnosed structures (discs, degenerative changes, etc.) that symptoms will not improve. This facilitates a biomedical approach to treatment and care, which, as outlined by Beales et al in 2016, is notoriously unhelpful.<sup>13</sup>

In short, taking an image (MRI/X-ray), and then blaming a particular structure as the source of symptoms, often serves to negatively impact rehabilitation from injury. So how can injured workers experience positive outcomes if imaging is not indicated? By performance of a thorough exam. Physical therapists are well trained to perform a thorough exam to establish the actual source of an injured worker's pain. Once identified, therapists can intervene with a variety of treatment options to improve the patient's acute symptoms, facilitate buy-in, and reduce stress.

## Context with Medical Imaging Studies

But what happens when an injured worker presents in the clinic for an evaluation and they have already been given a "diagnosis" based on medical imaging? While this can certainly provide a hurdle, therapists can assist by adding perspective, and therefore reducing stress and anxiety. Numerous studies<sup>14,15</sup> have shown a very high prevalence of asymptomatic patients that present with positive findings on diagnostic imaging. Conversely, studies have shown a high prevalence of symptomatic patients with negative imaging findings. The take home message: positive findings do not directly correlate with symptoms. Putting these diagnostic imaging results into perspective can allay many of the fears that the injured worker has on their prognosis, and allow for faster progression toward a positive functional outcome.

## Meditation for Stress Management

Another element worth discussing in reference to stress and

anxiety is the substantial neural overlap in our brains in regards to where one experiences emotions and physical pain. When patients are in a stressful state, it becomes easier to exacerbate painful conditions or to increase the intensity of pain. Patients with additional psychosocial factors are more likely to develop chronic pain. Chronic pain can further drive the patient's stress and anxiety, creating a vicious pain-stress cycle. Physical therapists can intervene to break this cycle by educating injured workers on meditation. This incredibly simple, yet effective treatment has been demonstrated to improve mood, increase our sense of well-being, and assist with the symptoms associated with anxiety, stress, and depression.<sup>16</sup>

Improving our present state or mindfulness through meditation has been demonstrated to activate or deactivate portions of our brain and cause positive impacts on its' functionality. This happens through a process called neuroplasticity, where the brain can form new neural pathways that can better assist with managing fear, stress, and anxiety while also improving our focus and decision-making. Learning meditation can be an easy process, and not nearly as difficult as many assume. There are numerous resources available, ranging from books, to phone applications, podcasts, and websites. A physical therapist can introduce these resources and educate on the benefits of daily meditation. This can make an impact on an injured workers' functional outcome, even if only performing meditation for as little time as 10 minutes a day.

### Sleep – The Unsung Hero

Another often overlooked factor when managing and recovering from an injury is sleep. The National Institute of Health recommends that adults over the age of 18 get, on average, at least 7 to 8 hours of sleep per night. A National Sleep Foundation poll, performed in 2013, showed that more than 65% of the United States population fail to obtain the recommended 7 to 9 hours of sleep each night during the week.<sup>5</sup> Bodies need sleep to reorganize the musculoskeletal and neurophysiologic systems, as well as repair important neural connections in the brain. This can help regulate systems that govern how pain responses are impacted by past experiences like fear, anxiety, and depression. In fact, sleep, particularly Rapid Eye Movement (REM) sleep (which is most prevalent during the end of an 8-hour sleep cycle), can be paralleled to a 'soothing balm' for our emotional state. During REM sleep, concentrations of a key stress-related chemical (noradrenaline) are completely shut off within your brain.

Why is this important? It allows for the "reprocessing of upsetting memory experiences and themes in a neurochemically calm, safe, ... brain environment."<sup>75(p208)</sup> This is essential for humans to properly process stressful events, and reduce the visceral, painful emotional element that was previously wrapped around those memories and experiences. Imagine what this means for injured workers who are not sleeping enough. By not getting 8 hours, they are missing out on an opportunity for REM sleep, which allows for an elevated level of a stress chemical in their brain, and this subsequently makes it difficult to remove the emotional stress from the experience. By staying in a neurologically stressful state, this can drive other physiologic responses (previously discussed above), which can further delay healing and increase the probability of a poor outcome.

An understanding of the importance of sleep provides physical therapists and healthcare providers an opportunity to educate injured workers on the benefits of a good night's sleep. By doing so, one can help them manage stress and anxiety, which in turn will

help them better manage their pain, and promote improvement in function. One of the most important strategies a physical therapist can recommend to patients is to establish a nightly routine to prepare their body for sleep. This has been shown to enhance the amount and quality of their sleep.<sup>5</sup> Most importantly, this routine should include going to bed (and getting up) at the same time every day. Additional elements of this routine can include reading a book (no iPads or phones), taking a warm shower, meditation, and oral hygiene. Computer or phone screens should be eliminated at a minimum of 30 minutes prior to going to sleep, as the light emitted from these screens activates portions of the brain associated with wakefulness, and delays release of melatonin.<sup>5</sup>

Additionally, nutritional and dietary consumption should be considered when trying to promote improved sleep. All caffeine should be avoided after noon, and fatty and sugary foods should be avoided right before bed. Furthermore, alcohol should be avoided completely. While drinking alcohol may make one feel sedated and help to fall asleep, it negatively impacts the quality of one's sleep, most often by fragmenting sleep and by suppressing the ever-important REM sleep (mentioned above). Finally, ensuring that one's environment is suitable to promote proper sleep is crucial. This includes reducing light and noise prior to going to bed, keeping the room dark, and maintaining a slightly lower temperature than normal (experts recommend 65 degrees). This will keep our body's core temperature at a lower level, which is essential to falling asleep and maintaining restful sleep.<sup>5</sup>

### Reassurance – Hurt vs. Harm and Tissue Healing

In addition to education on diagnostic imaging, meditation, and sleep, therapists and healthcare providers can provide assurance to the injured worker that one's bodies have an unbelievable ability to heal naturally. As mentioned above in the diagnostic imaging paragraphs, many common diagnoses possess words like "degenerative," or "torn muscle." These words can elicit a response from the injured worker that makes them wonder if they will ever heal from their injury. The fact is, for most musculoskeletal conditions, complete healthy tissue healing time ranges from as little as 6 weeks to 6 months after an injury (depending on the type of tissue injured and the type of collagen needed to repair). As the patient's tissue heals, any pain that persists beyond tissue healing time is likely more associated with central (brain) protective responses, and less derived from local tissue (nociceptors).

Considering what we have just discussed about stress and anxiety, and the physiologic and psychological responses that accompanies it, an injured worker in a stressful state can find themselves falling victim to this centrally driven genesis of pain. This is why it is so important to educate our patients on our body's natural ability to heal, along with explaining topics like pain neuroscience to add context to their symptoms and persistent pain. By educating the injured worker, we can demystify the origins of their symptoms, and place the injured worker in a position to better manage their symptoms. Placing the injured worker in control of symptoms not only increases the probability of functional progression, but also decreases their sense of stress and anxiety.

### SUMMARY

To briefly summarize, injured workers fare worse than their non-workers' compensation counterparts. There are a variety of reasons for this, some of which are not modifiable. However, there are strategies that can be implemented by payers and employers



to reduce stress. Additionally, healthcare providers, in conjunction with providing patients with evidence-based treatments, can provide education on a variety of topics, all of which are suited to reduce the stress and anxiety associated with a work-related injury. By doing so, all stakeholders can improve the probability of the injured worker having a positive rehabilitation and claim experience. Why does this matter? Studies have shown that having a positive claims experience is strongly associated with earlier return to work after a work-related injury.<sup>17</sup>

Furthermore, evidence has shown that programs designed to decrease stress levels in injured workers have been effective in their return-to-work rates.<sup>18</sup> Finally, in addition to the costs savings from decreased medical claims and earlier return to work, reducing worker stress has also proven to be effective in reducing turnover and absenteeism while also increasing productivity.<sup>6</sup> All of this to say, the evidence supports taking steps to minimize stress and anxiety to the injured worker. By doing so, and by engaging all stakeholders throughout the continuum of care, physical therapists can facilitate better outcomes and reduce costs.

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