



# WORK INJURY COMPENDIUM

- TERMINOLOGY
- RISK FACTORS
- SCREENING TOOL
- TRACKING PROGRESS

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## PREAMBLE

The following information has been compiled to provide an easy reference guide for Insurance Workers, on commonly used terms and other important aspects of management of workers with Musculoskeletal Pain Disorders. This information is based on contemporary evidence but also includes some practical interpretation added by the authors to assist understanding and application in the context of the workers compensation environment.

This guide has been designed to be used in conjunction with the lecture based education modules presented by the authors, where additional background information and interpretation is provided.

This resource has been provided as a free use tool. It can be freely distributed for the purposes of education and knowledge sharing.

# TERMINOLOGY

## INJURY TAXONOMY

### Acute Injury

An injury that has occurred in the last six weeks.

### Chronic Injury

An injury that has been present for three or more months. This can include recurrent or persistent problems that may be associated with fluctuating levels of pain and disability.

### Sub-Acute Injury

An injury that has been present between six weeks and three months.

### Red Flags

Red flags are clinical indicators of possible serious underlying conditions. For example; cancer, neurological problems or bladder dysfunction.

### Yellow Flags

Yellow flags are indicators suggesting increased risk of progression to long-term distress, disability and pain due to the influence of psychosocial factors.

### Biopsychosocial

Contemporary understanding of pain and pain disorders dictates consideration of factors contributing to pain and disability from multiple domains.

**Bio-** physical attributes of the disorder including pathology and red flags.

**Psycho-** psychological contributions (yellow flags) such as stress and depression.

**Social-** determinants particularly involving work place factors and home factors.

Biopsychosocial contributions are relevant in both specific and non-specific disorders.

**Multidisciplinary care** relates to having a team of health care practitioners with expertise to cover management of all of the biopsychosocial factors contributing to a disorder.

### Biomedical

An approach to managing musculoskeletal pain disorders that is dominated by the biological attributes of the pain disorders with a focus on identifying pathology. This remains the dominant approach in medicine, despite ample evidence that biomedical causes can only be identified in a small number (approximately 15%) of all musculoskeletal conditions.

Society's view of pain disorders is also based on the biomedical model. In many ways the workers' compensation system is also beholden to a biomedical model. This can create significant difficulty in managing injured workers who often require a multidisciplinary, biopsychosocial approach.

# TERMINOLOGY

## Sprains and Strains

These terms refer to either single incident or overuse injuries that result in a soft tissue injury. Examples include muscles, ligaments or tendons. The majority of sprains and strains will usually recover well within six weeks. However, the presence of additional Risk Factors can result in delayed recovery in this group.

# TERMINOLOGY

## PAIN TAXONOMY

### Pain

“An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”

*International Association for the Study of Pain*

### Mechanical Pain

Pain that is related to or provoked by physical stimulus. For example; specific movement(s), posture(s) and/or positions.

### Non-Mechanical Pain

Pain that is not specifically related to or provoked by physical stimulus of specific movement(s), posture(s) and/or positions. For example; constant pain, spontaneous pain at rest.

### Neuropathic Pain

“Pain caused by a lesion or disease of the somatosensory nervous system.”

*International Association for the Study of Pain*

Examples include pain from a peripheral nerve lesion secondary to trauma or other medical conditions such as diabetes.

Neuropathic pain is a type of non-mechanical pain. Cardinal symptoms may include hyperalgesia (“Increased pain from a stimulus that normally provokes pain.”) and allodynia (“Pain due to a stimulus that does not normally provoke pain”). These symptoms may also occur in the absence of actual damage to the nervous system, resulting in neuropathic-like symptoms.

### Central Sensitisation

Increased responsiveness of the central nervous system to input. This is a normal initial protective response to an injury and assists in protecting an injured part. Central sensitisation results in pain amplification and symptoms such as hyperalgesia and allodynia.

Central sensitisation may persist and become an abnormal part of a pain presentation. Central sensitisation in this regard is frequently used as a diagnosis/category of pain. When this occurs, it would be technically more correct to consider the disorder as neuropathic-like pain.

### Radicular Pain

Pain related to the nerve root as it emerges from the spine (may be called a nerve irritation). This can occur secondary to a direct injury which would include compression (from a disc protrusion or other forms of spinal canal narrowing- visible on diagnostic scans). It may also occur via chemical irritation/inflammation (not visible on a diagnostic scan).

# TERMINOLOGY

## MUSCULOSKELETAL DISORDERS

### Specific

Specific disorders are those where a diagnosis can be made by combining clinical findings with specific diagnostic testing such as scans and/or blood tests. For example; osteoporosis, fractures, rheumatoid arthritis and radiculopathy.

Difficulty is inherent in that many scans can have positive findings in individuals who have never experienced pain. It is estimated that in only around 15% of cases can a specific musculoskeletal diagnosis be made.

### Non-Specific

For the majority of disorders (85%) a specific diagnosis cannot be made, and hence a non-specific diagnosis is made. For example; non-specific low back pain, non-specific neck pain, etc.

In the case of a non-specific disorder, contributing factors can still be determined. It is very important that contributing factors are looked at in non-specific disorders as they are needed to guide optimal management. Contemporary understanding is that contributing factors need to be considered from a biopsychosocial perspective.

### Whiplash (WAD- Whiplash Associated Disorder)

Whiplash is a term to denote a mechanism of injury where there is sudden force through the neck. This is most commonly associated with a car accident, but may also occur in other circumstances such as a fall. The term whiplash gives no indication of the extent of injury, pain or disability. A whiplash associated disorder (WAD) is a disorder as a result of a whiplash injury.

### Bursitis

A bursae is a fluid filled sac in the body that provides a cushion between bone and tendons. Bursitis is related to irritation of the bursae. Most commonly this occurs in the hip (trochanteric bursitis) and shoulder (sub-acromial bursitis). Bursitis is not necessarily a simple problem of increased inflammation in the bursae, as previously thought. There are multiple causes of bursitis and establishing the cause is critical for guiding appropriate management.

### Tendonitis/Tendinopathy

A tendon attaches muscle to bone. True tendonitis would relate to inflammation of the tendon. Tendonitis is not very common and is frequently a misdiagnosis for what is a tendinopathy. Tendinopathy is the more correct term that describes a range of abnormal structures of a tendon, including the more commonly seen degenerative process. Development of this is commonly associated with overuse or unaccustomed use.

## TERMINOLOGY

### Frozen Shoulder/Adhesive Capsulitis

Condition typified by extreme stiffness of the shoulder joint. Frequently occurs spontaneously. May also occur as a complication following surgery. Usually self-limiting and typically occurring over a period of about 18 months.

### Rotator Cuff Tear

Involves a tear in one of the tendons around the shoulder (most common in Supraspinatus at the top of the shoulder). Can be due to trauma or wear and tear. Rotator cuff tears are commonly present in people without pain.

### Complex Regional Pain Syndrome (CRPS)

A spectrum of non-mechanical pain disorder with neuropathic-like pain features. Associated with very high degrees of pain and disability. There may also be changes associated with sympathetic nervous system changes, such as increased hair and nail growth, skin changes, swelling and wasting. Reflex Sympathetic Dystrophy is older terminology, now covered in the CRPS spectrum of disorders.

### Fibromyalgia

A widespread pain disorder frequently involving muscle pain. The causes are related to biopsychosocial factors. Diagnostic criteria include specific muscular tender points and sleep disturbance.

### Radiculopathy

A specific diagnosis that involves reduced muscle power, reduced tendon reflexes and altered sensation in the area served by a peripheral nerve. The cause is due to direct compression of the nerve as it exits the spine.

# TERMINOLOGY

## NON-MUSCULOSKELETAL DISORDERS

### Depression

“A state of low mood and aversion to activity.” An injured worker may have a transient depressed mood because they have not been able to work. In another instance, a worker may have a continuous depressed mood because they feel they are never going to be able to return to their previous job. Or in a third circumstance, an injured worker may have a clinical depression disorder. Depression may be present before an injury occurs, but can still influence recovery.

### Anxiety

“An unpleasant state of inner turmoil.” As per depression this may be a transient, continuous, or a clinical disorder unto itself.

### Stress

Stress is intimately related to the above two disorders. Mental stress can be caused by or can influence pain levels and injury recovery.

Further information can be found at: [www.beyondblue.org.au](http://www.beyondblue.org.au)

# TERMINOLOGY

## CONSERVATIVE INTERVENTIONS

**KEY POINT:** There is strong evidence for the use of exercise in rehabilitation of musculoskeletal pain disorders. There is however no strong evidence that any one form of exercise is superior to any other form. In other words, one could argue it doesn't matter what you do, but doing something is better than doing nothing. Recent literature supports that there is general consensus that exercise programs, regardless of their format, should be focused on rehabilitation of functional impairments specific to the individual and their work requirements.

### Core Stability

A confusing, popular term relating to function of the muscles around the spine. Core stability treatment often has a focus of strengthening muscles around the spine. However, there is no evidence that improving core stability is any better than any other form of exercise for musculoskeletal pain disorders. There is no defined set of exercises that constitutes a core stability exercise program.

### Pilates

A popular form of exercise frequently integrating core stability with movement and stretching. It was originally developed as rehabilitation and conditioning training for dancers. There is no evidence that Pilates is any better than any other form of exercise for musculoskeletal pain disorders. There is no defined set of exercises that constitutes a Pilates exercise program.

### Hydrotherapy

Exercise in water. Hydrotherapy may be most suitable where the injured worker cannot tolerate exercise on land or in a post-surgical capacity where limited weight bearing may be desirable. There is no evidence that hydrotherapy is any better than any other form of exercise for musculoskeletal pain disorders.

### Gym Based Program

Specifically aimed at general strengthening activities. Indicated when general strengthening and general activity/cardiovascular training is required. There is no evidence that a gym program is any better than any other form of exercise for musculoskeletal pain disorders.

### Passive Treatment

Non-exercise management essentially for which the patient is a passive recipient. Examples are massage, joint mobilization and electrotherapy.

Physiotherapy is not passive treatment, but may utilise passive treatment in the management of musculoskeletal disorders. Most physiotherapists would utilise passive treatments as part of a multimodal injury management process that also includes active exercise management.

## TERMINOLOGY

Passive treatments are utilised for pain control and restoration of movement. Passive treatments as a stand alone treatment after 6-12 weeks from an injury date/surgical date are unlikely to be restorative.

### Electrotherapy

A form of passive treatment that includes modalities such as ultrasound and electrical stimulation. A TENS machine would also be considered a form of electrical stimulation. After the initial acute stage electrotherapy is primarily useful for temporary relief of pain only.

### Manual Therapy

Passive treatment performed by a therapist that includes all forms of massage, joint mobilization (passive movement of joints) and manipulation. There is reasonable evidence for the use of manual therapy in the acute phase.

# TERMINOLOGY

## DIAGNOSTIC TESTS

### X-ray

Provide 2 dimensional images with greatest clarity of bone.

### Ultrasound

Provide 2 dimensional images with greatest clarity of soft tissue such as muscle and tendons.

### CT Scan

Provide 3 dimensional images with greatest clarity of bone.

### MRI

Provide 3 dimensional images with clarity for bone and soft tissue such as muscle, tendons, articular cartilage, ligaments and intervertebral discs.

### Bone Scan

Identifies 'hot spots' which are an area of increased bone metabolism. For example; infection, tumor, inflammation and arthritis and fractures.

### Bone Density Scan (DEXA)

A test specifically for the identification of osteoporosis (loss of bone mass).

### Nerve Conduction/EMG

Test to determine function of a nerve. This test is essentially for instances where there is damage to the nerve pathways causing a conduction disturbance; e.g. peripheral neuropathy and radiculopathy. It does not assess irritation of the nerve or changes in sensation related to abnormal pain processing such as neuropathic-like pain.

# TERMINOLOGY

## DIAGNOSTIC TESTS FINDINGS

### False Positives

Positive findings on diagnostic scans are commonly found in people that have not experienced pain. For example:

- 30% of pain free individuals can have lumbar disc herniation on a MRI scan.
- Rotator cuff tears are very common in pain free individuals, especially with advancing age.
- Degenerative changes are very common in all joints with a complete absence of pain.

Positive scan findings also can remain after pain has resolved and normal function has been resumed.

### Patient Perceptions

The results of diagnostic scans can influence people's beliefs about their disorder in a negative manner. Examples of this are;

- Subjects who receive a MRI scan early for back pain have worse outcomes 1 year later than those who do not. *Webster, J Occup Environ Med, 52(9), 900-907*
- Use of degenerative terms like wear and tear result in more negative expectations about recovery. *Sloan, Spine 35(21), E1120-25*

### Degeneration

Degeneration refers to changes in the appearance of the body occurring as part of aging. It may also occur secondary to repeated stress or high levels of loading. Degenerative changes, even those considered to be severe, on diagnostic scans are very common even in people without pain. Pre-existing asymptomatic degenerative changes may become symptomatic following an injury.

### Annular Tear

A tear in the outer region (annulus) of the intervertebral disc. These are common in asymptomatic individuals. They have become more frequently identified as the technical capability of scans such of MRI's has improved. There is a poor correlation between annular tears and pain and disability.

### Disc Bulge

A circumstance where the outer portion of the intervertebral disc (the annulus) literally bulges outwards. This is common in asymptomatic individuals. There is a poor correlation between disc bulges and pain and disability.

### Disc Prolapse/Herniation

A situation where the inner disc material (nucleus pulposus) passes beyond the outer rim of the annulus. This becomes problematic as the disc material may impinge on the nerve roots ([nerve impingement](#)) or spinal cord. Interestingly, even disc herniations occur frequently in people without pain. A [ruptured disc](#) is another term used to describe a prolapse.

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## Slipped Disc

This is an inaccurate term frequently used to describe disc pathology. This is not a possible occurrence, as the disc is tightly bound to the vertebrae.

## Spondylosis

Degenerative arthritis of the spinal joints.

## Spondylolysis

Defect in the vertebrae (essentially a crack in the bone, that may or may not be related with pain), most commonly in the pars of the vertebral arch.

## Spondylolisthesis

Where one vertebra moves forward or back slightly on the vertebra below it.

## Spinal Stenosis

Where there is a narrowing of the spinal canal where the spinal cord sits. This may or may not result in symptoms due to compression on the spinal cord.

## Modic Changes

Changes in the vertebral body seen on MRI. These can be associated with inflammation or infection.

# TERMINOLOGY

## MEDICAL PROCEDURES

### Diagnosis Versus Treatment

Many injection procedures may be performed to ascertain if pain is related to a specific structure. This generally involves the injection of local anesthetic to see if this significantly reduces pain symptoms. Invariably these procedures are also performed as treatment at the same time, with cortisone (anti-inflammatory) being injected at the same time as the anesthetic.

These procedures are highly linked to the biomedical model of pain, which as stated above is extremely limited in its ability to explain pain and disability for the majority of patients who have non-specific disorders and biopsychosocial presentations.

The utility and efficacy of these injection procedures in either a diagnostic or treatment manner has been highly questioned in recent times. Current thinking is that successful reduction in pain following a procedure provides an opportunity to improve the capacity of an injured worker through interventions such as exercise rehabilitation and graduated return to work.

### Cortisone Injection

Anti-inflammatory medicine injected into sources of pain (eg. joints, bursae).

### Intra-articular Injection

Injection into a joint.

### Facet Joint Injection

An intra-articular injection into the facet joint of the spine. This is primary for localised spinal pain.

### Epidural Injection

An injection into the epidural space at the back of the spinal to target spinal nerves and discs. For localised spinal pain and referred arm/leg pain.

### Nerve Root Sleeve Injection

An injection around the nerve root as it exits the spine. For referred arm/leg pain.

### Rhizotomy

A procedure where small nerves supplying local spinal structures, eg. facet joints, are temporarily disrupted with the aim of blocking pain in the area. This can be achieved by various methods including radiofrequency (burning), freezing or cutting. Usually done following successful pain relief from a spinal injection.

### Discogram

A test specifically to see if the intervertebral disc is a source of symptoms. Cortisone can also be injected into the disc during this procedure.

# TERMINOLOGY

## OPERATIONS

### Discectomy

When a portion of the intervertebral disc is removed. Used to relieve pressure on nerves.

### Laminectomy

When a portion of spinal bone is removed. Used to relieve pressure on nerves.

### Disc Replacement

The intervertebral disc is replaced by an artificial disc.

### Fusion

Two or more vertebrae are jointed together with implants and/or bone grafting.

NOTE 1: Spinal surgeries are primarily indicated for radiculopathy or other symptoms on neurological compromise. The outcome of spinal surgery is less certain when performed primarily for pain relief.

### Acromioplasty/Sub-acromial Decompression

When a portion of acromion (bone at the tip of the shoulder) is removed with the idea that increased space is made for the tendons and bursae that pass underneath the acromion.

### Rotator Cuff Repair

When a tendon tear in the rotator cuff (small muscles around the shoulder joint) is surgically repaired.

NOTE 2: Specific criteria for selection of patients with shoulder pain who are likely to benefit from shoulder surgery remains uncertain.

### Joint Arthroscopy

In joint arthroscopy a small camera is placed into a joint. While visualising the joint in this manner, damaged joint structures can be trimmed or repaired. Commonly used for procedures in the shoulder, elbow, wrist, hip, knee and ankle.

The efficacy and usefulness of arthroscopy in common orthopaedic problems such as for sub-acromial shoulder pain or knee pain is not clear. For example, the long-term outcome of arthroscopic surgery for the knee has been shown to be no better than usual medical care and physiotherapy exercise. *Kirkley, N Eng J Med, 359(11), 1097-1107*

Given this, arthroscopic surgery may be most suitable when appropriate conservative management has failed.

# TERMINOLOGY

## Joint Replacement

Surgical procedure where joint surface/s are replaced by metal (or other artificial) implants. Common for degenerative arthritis or severe joint damage where conservative management has failed to improve pain and disability.

NOTE 3: A high contribution of negative psychosocial factors (yellow flags) to the patients overall presentation are a known specific risk factor for poor surgical outcomes. This is also likely to be the case for injection procedures.

NOTE 4: Clinical experience indicates a high contribution of non-mechanical (ie neuropathic) factors to the patients overall presentation is a risk factor for poor surgical outcomes. This is also to be the case for injection procedures.

# TERMINOLOGY

## HEALTH CARE PROVIDERS

There is plenty of overlap between what different health care providers may offer in the management of injured workers. What follows is not meant to be definitive or exhaustive. Additionally, best practice management of complex disorders generally requires a multidisciplinary approach.

### Physiotherapist

Expertise in restoration of function via specific exercise, general exercise and non-medicine pain control. Physiotherapists along with General Practitioners are the most utilised health care provider in the workers compensation arena.

USE: Acute injury management, primary functional rehabilitation and restoration of work capacity. Physiotherapist may also contribute to work place interventions including ergonomic interventions.

### Specialist Physiotherapist

A physiotherapist who has attained the highest recognised level of clinical competency from the Australian College of Physiotherapists. It is equivalent to gaining medical specialty.

USE: Able to provide detailed analysis of factors contributing to pain and disability from a biopsychosocial perspective. Based on this they are able to provide a detailed treatment plan with particular focus on increasing physical capacity through exercise rehabilitation. They can also assist with parameters around work capacity and the need for surgical consultation.

### Pain Medicine Specialist

Medical specialists who manage pain.

USE: Opinion primarily related to the use of medications and pain relieving procedures (injections). Also make recommendations related to multidisciplinary management.

### Orthopaedic Surgeon

Medical specialists responsible for surgery related to musculoskeletal complaints.

USE: Opinion on the need for surgery and performance of surgery.

### Neurosurgeon

Medical specialists responsible for surgery related to the nervous system, in the case of workers compensation mostly related to spinal surgery.

USE: Opinion on the need for surgery and performance of spinal surgery.

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## Occupational Physician

Medical specialists in workplace injury.

USE: Offer opinions on causation. Offer opinion related to work capacity and future treatment requirements. Determination of Maximum Medical Improvement and Permanent Impairment.

## Neurologist

Medical specialists in neurological disorders.

USE: In the workers compensation arena neurologists are utilised in the presence of serious neurological disorders or nerve injuries. They may also be utilised in the case of headaches where a potential neurological cause needs to be ascertained. Neurologists commonly perform nerve conduction/EMG testing when it is indicated.

## Sport Medicine Physician

Medical specialists in sport injuries. They have specialist knowledge of musculoskeletal disorders and consequently their expertise can also be appropriate in the management of work injuries when surgery is not required.

USE: Additional opinion on non-surgical management of musculoskeletal disorders.

## Exercise Physiologists

Have expert training in strength and conditioning training.

USE: Development and integration of strength and conditioning programs for injured workers when indicated.

## Occupational Therapists

In the workers compensation arena primarily work in the management of hand related disorders. In this instance they often do additional training to become [hand specialists](#). Note: physiotherapists may also become hand specialists.

USE: Hand injury rehabilitation.

## Psychologist

Mental health experts (who are not trained as medical doctors).

USE: Assessment and non-medication management of mental health issues.

## Psychiatrist

Mental health specialists (who are trained as medical doctors).

USE: Assessment, diagnosis and management of mental health issues including prescription of medicines.

# TERMINOLOGY

## PAIN MEDICATIONS

Below is a list of commonly used pain medications and examples of conditions where they are commonly used.

### Non-Prescription Pain Medicines

Examples: Paracetamol, Panadol Osteo.

Uses: First line choice for acute pain management.

### Anti-Inflammatories

Examples: Celebrex, Naprosyn, Voltaren, Neurofen (non-prescription).

Uses: Often used in conjunction with Paracetamol for acute pain. Primarily only indicated in the presence of inflammation.

### Prescription Pain Medicines

Examples: Panadeine Forte, Tramadol

Uses: Used when first line non-prescription medicines are not effective for acute pain. Also used for chronic pain management.

### Opioid Pain Medicines

Examples: Oxycontin, Oxynorm, Norspan.

Uses: For severe pain when prescription pain medicines are ineffective. They are highly addictive and are primarily only for short-term use.

### Medicines for Nerve Pain

Examples: Lyrica, Pre-gabalin, Gabapentin, Endep

Uses: Used for neuropathic or neuropathic like pain.

### Muscle Relaxants

Examples: Valium, Diazepam

Uses: Used for short-term relief of acute, severe muscle spasm. They can also be used to aide sleep.

# RISK FACTORS

## OVERVIEW

Risk factors for poor outcome are:

- Biopsychosocial in nature, though biological risk factors are not as common as the other domains.
- Complex.
- Individual in nature.
- Interact and accumulate.

[Compliance](#) and [willingness to help oneself](#) are critical in optimal recovery following a work injury. Many of the recognised risk factors that follow have negative implications for these issues.

Early identification (and then appropriate, targeted intervention) of risk factors for poor outcome is recognised as critical to preventing disability and associated claim costs.

# RISK FACTORS

## PAIN FEATURE RELATED

### Very High Pain Intensity

Very high levels of constant pain in the early phase of an injury is a risk factor for poor/delayed recovery. In a similar manner, [very high disability levels](#) initially are also associated with poorer outcomes.

### Radicular Pain

Referred pain into the extremities from the spine is a risk factor for poor/delayed recovery. As a general guideline to this would most likely include pain that originates in the spine and refers below the elbow or knee.

### Neuropathic/Neuropathic-Like Pain

These disorders can be particularly resistant to positive change.

### Widespread Pain

Patients with widespread pain or pain in multiple body areas are a risk of poorer outcomes.

### History of Pain

History of previous injuries and work absence are a risk factor for further work absence.

# RISK FACTORS

## OCCUPATIONAL FACTORS

### Work Demands

Workers with highly physically demanding jobs, with heavier and/or very repetitive tasks, are at risk of poorer return to work outcomes.

### Work Support

Poor work support, from supervisors and co-workers, are risk factors for poor outcomes. The lack of support may be actual or simply perceived by the worker to be a negative factor. This includes-

- When there is [unavailability of alternate duties](#).
- [Breakdown](#) in the relationship between the employer and the employee.
- [Performance management issues](#).

### Job Satisfaction

Workers who enjoy their work have better return to work outcomes.

### Compensation

Compensation itself is related to poorer outcomes. Retention of [legal representation](#) is an additional risk for poor outcome.

# RISK FACTORS

## PSYCHOLOGICAL FACTORS

### 1. Cognitive

#### Low Recovery Expectations

One of the strongest predictors of recovery is a workers own expectation/assessment of their ability to return to work.

#### Pain Beliefs

Negative pain beliefs are strongly related to poorer return to work outcomes. This especially relates to people who hold biomedical and structural beliefs regarding the cause of their problem. These beliefs can be influenced by culture, family, friends, co-workers, and importantly health care practitioners. These influences can be positive or negative.

#### Fear Avoidance

Fear avoidance behaviours, which are closely related to beliefs, are another strong predictor of poor outcome. Examples include avoiding loading an injured leg even after the initial injury has healed or continuing to avoid bending after an acute back sprain due to a belief that they have a 'slipped disc'.

#### Coping

People have different coping strategies. Poorer coping strategies like catastrophising (believing things are far worse than they are) and rumination (unable to shift focus from pain and disability) are associated with poorer outcomes.

#### Passive Approach to Recovery

People who do not take an active involvement in their rehabilitation tend to have delayed recovery. For example; seeking ongoing passive treatment and not engaging in active exercise management.

### 2. Emotional

#### Depression, Anxiety and Stress

Co-existence of any or all of these alterations in mood have a negative impact on recovery.

#### Post-Traumatic Stress

This is a stress response to a specific event or experience that can then complicate recovery. This has most noticeably been demonstrated in whiplash associated disorders.

#### Anger

Anger and frustration is common in the workers compensation environment where recovery and claim management does not meet the expectations of the injured worker.

# RISK FACTORS

## SOCIAL FACTORS

### Education

Lower levels of education are associated with longer periods of work absence following injury.

### Income

Lower income workers are associated with longer periods of work absence following injury. This may compound issues of [financial hardship](#).

### Home Support

Poor social support and high levels of social dysfunction are related to greater work absence. It is not uncommon for relationship issues to impact on worker recovery due to influences across multiple domains such as mood and sleep.

## LIFESTYLE FACTORS

### Sleep

Sleep is restorative, so reduced sleep quality and/or duration can be associated with ongoing pain and delayed injury recovery. Poor sleep can result from being in pain. Conversely poor sleep promotes pain.

### General Activity Levels

Lack of regular exercise and lower general activity levels have been linked to increased work absence. Reduced activity is a common result of being injured. Ongoing inactivity can have negative impacts across multiple domains including physical conditioning, mood and general health.

### Smoking

There is some evidence that smoking has a negative effect on injury recovery.

# RISK FACTORS

## PHYSICAL FACTORS

### Obesity

There appears to be some link between obesity and being over-weight with work absence.

### Reduced Strength and Fitness (Deconditioning)

This is not a general risk factor, however it will increase risk of injury for certain occupations. For example, workers completing highly repetitive, highly physically demanding work tasks will require task specific conditioning to guard against injury. Sprains and strains commonly occur when a worker starts a new job or returns from a period of absence (eg. holiday).

### Habitual Postures and Movement Patterns

Posture itself is not a predictor of injury. However, with specific tasks (eg bending and lifting) a combination of habitual end range spinal posture, poor muscle endurance and prolonged exposure to those postures is associated with increased report of pain. In addition we know the spine is at risk during awkward end range loaded positions, such as bending and twisting at the same time.

## OTHER FACTORS

### Age

Older age is associated with poorer outcomes from work injuries.

### Poor General Health

Poor general health and the presence of other non-musculoskeletal comorbidities are associated with poorer outcomes.

### Gender

In general females are more likely to report chronic pain disorders than males. Similarly, female gender is associated with poorer outcomes after work injuries.

# SCREENING TOOLS

Screening tools can be used to assist risk profiling of injured workers. They are not infallible, and should really act as a guide for more specific assessment. The individual questions can provide insight into the specifics of common risk factors for poor recovery.

## Orebro Musculoskeletal Pain Questionnaire

This is the most established and well researched screening questionnaire for use in work injuries.

Interpretation: (from WorkCover NSW)

When completed 4 to 12 weeks following a soft tissue injury a cut-off score of 105

- has been found to predict those who will recover (with 95 per cent accuracy),
- those who will have no further sick leave in the next six months (with 81 per cent accuracy), and
- those who will have long-term sick leave (with 67 per cent accuracy).

In another study in a NSW population of workers:

- a cut-off score of 130 correctly predicted 86 per cent of those who failed to return to work.

## Short-Form Orebro Questionnaire

This is a shorter 10 question version of the longer questionnaire, with results correlating well to the longer form question.

Interpretation: A score >50 is associated with poorer return to work outcomes.

## STarT Back Screening Tool

Another option with good validity that can be used to screen individuals specifically with low back pain for risk of delayed recovery. This is a brief nine item questionnaire.

Interpretation: Three risk categories being low, medium and high are designated based on the questionnaire results. There is evidence that higher risk individuals benefit from more comprehensive biopsychosocial management in the early stages of their injury. Conversely low risk individuals tend to recover well with less care.

## For Neuropathic Pain

The Leeds Assessment of Neuropathic Signs and Symptoms (LANSS) provides some indication of the contribution of neuropathic/neuropathic-like pain to the disorder.

Interpretation: A score >12 neuropathic mechanisms are likely to be contributing to the patient's pain.

## TRACKING PROGRESS

### Return To Work Status

Primary indication of progress will be a return to work and /or progression of work duties and time spent at work.

In the situation of prolonged recovery, measures of progress other than return to work status will provide a more useful indicator of the workers progress. For example, in a worker with acute radiculopathy return to a physical occupation may not be realistic for at least 3 months. Thus measures other than return to work status are required.

### Screening Tools

The screening tools outlined above may be used to reassess injured worker progress.

### Disability Questionnaire

Specific disability questionnaires are available for all body regions and act as a useful supplement to screening tools.

### Patient Specific Functional Scales

These are a measure of patient's injury specific functional impairments.

### Physical Capacity Measurements

These can be useful to gauge the physical capacity of workers for specific tasks. In isolation, physical capacity measures are not strong predictors of return to work capacity.

Ideally tracking progress should utilise all of these measures.