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Work-related musculoskeletal disorders and risk factors

Workers can be exposed to risks that may lead to work-related musculoskeletal disorders (WRMSDs). This quick guide explains what work-related musculoskeletal disorders are and what factors increase their likelihood.

Key points

- WRMSDs are injuries or conditions that occur because of or are aggravated by work demands.
- Many risk factors contribute to work-related discomfort, pain, and injury.
- PCBUs must manage WRMSD-related risk factors to protect worker health.

What are WRMSDs?

WorkSafe uses the term work-related musculoskeletal disorders (WRMSDs) to refer to injuries or conditions of the musculoskeletal system that occur when work demands lead or contribute to the discomfort, pain, or injury.

WRMSDs are injuries and conditions affecting:

- muscles
- ligaments
- bones
- tendons
- blood vessels
- nerves.

WRMSDs may start as mild aches and pains and can develop into serious conditions.

Examples of WRMSDs include:

- strains or sprains
- joint and bone injuries or degeneration
- nerve injuries
- muscular and vascular disorders resulting from vibration
- soft tissue injuries such as hernias
- chronic pain.

In Aotearoa New Zealand, WRMSDs have also been known as:

- repetitive strain injury (RSI)
- occupational overuse syndrome (OOS)
- gradual process injury
- discomfort, pain, and injury
- body stressing.

WRMSDs may happen because of a single incident or event (for example, tripping over and spraining an ankle), or develop over time when workers are exposed to one or more risk factors. WRMSDs may affect work performance by:

- lowering a worker's ability to perform their job and to work safely
- reducing work productivity and quality as workers work around their pain and discomfort
- contributing to other illnesses and impacting a person's mental health.

For more information on our definition of WRMSDs, see [Definitions: Musculoskeletal disorders and work-related musculoskeletal disorders](#)

For information on how the definition was developed, see [Work-related musculoskeletal disorders – definitions review](#)

Risk factors for WRMSDs

There are many work-related risk factors that can contribute to injury. These factors can work alone or together. Both manual and sedentary work have risk factors that may lead to WRMSDs.

Work-related risk factors can be divided into five categories:

- biomechanical and physical factors (physical nature of work tasks)
- work organisation factors (how work is organised)
- environmental factors (work surroundings)
- individual factors (unique things that are specific to a person)
- psychosocial factors (how a person feels and how they connect with people).

Non-work factors may also contribute to risks (for example, sporting activity, hobbies or other after work activities may add to muscle fatigue).

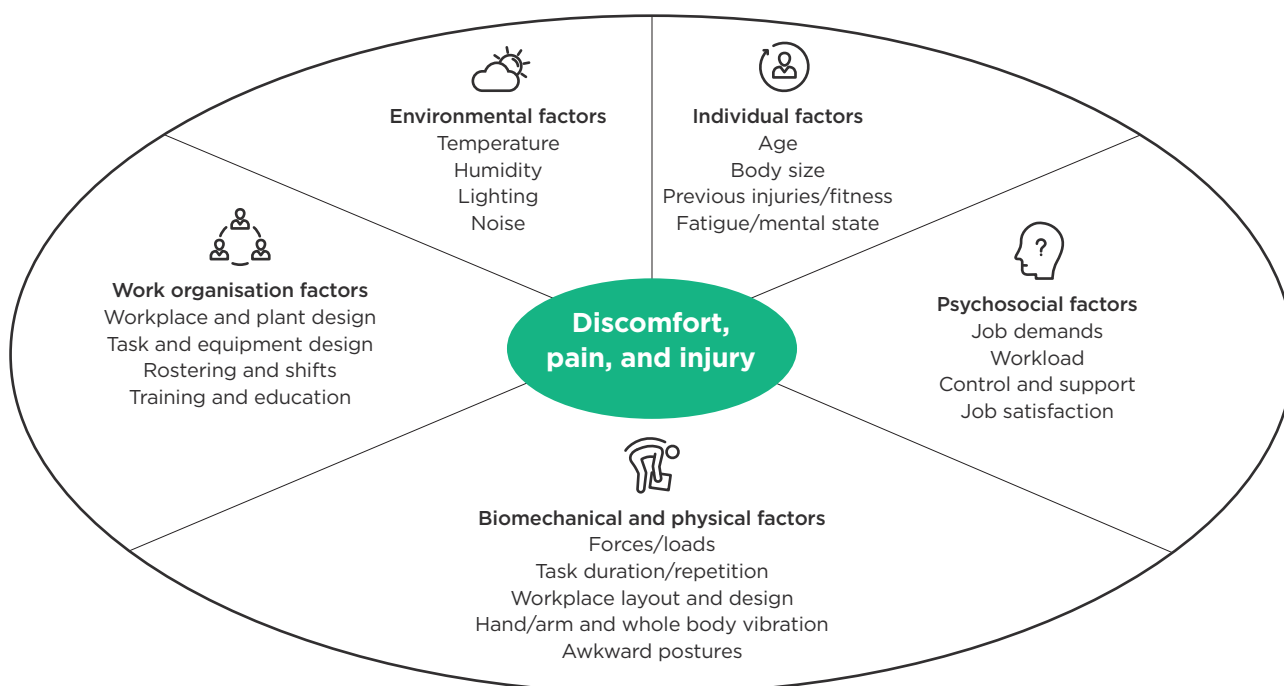


FIGURE 1:
Contributing factors for discomfort, pain, and injury/WRMSDs

Risk factors can affect workers in different ways

How each of these factors affect a person depends on their unique characteristics and situation.

A worker is likely to be exposed to several (and in many cases, all) of the work-related risk factors at the same time. The more factors the worker is exposed to, the higher is the likelihood of harm.

To understand how these factors can interact with each other, consider the following scenario below.

Donna has worked for the last 20 years on a production line in a factory. She is 55-years-old and had a previous injury to her shoulder which sometimes can become sore. These are examples of **individual factors** that may affect Donna at work.

Donna's job is to reach out and pick small boxes of baking powder off the conveyor and put them into larger boxes. The small boxes are light, but she repeats the same movements with her shoulders, arms, and hands throughout the day. She also stands to complete her tasks. These are examples of **biomechanical and physical factors** that may affect Donna at work.

Donna works set shifts of 8 hours a day, 5 days a week. There is no job rotation between tasks, and the conveyor heights are fixed. These are examples of **work organisation factors** that may affect Donna at work.

It is a large noisy factory, and it can be difficult to communicate with workmates. It also gets very hot in summer and cold in winter. These **environmental factors** may affect Donna at work.

Sometimes Donna feels stressed because she has no control over the conveyor speed, and she often struggles to keep up with the pace. She knows her manager will be annoyed if productivity is affected. These are examples of **psychosocial factors** that may affect Donna at work.

Outside of work, Donna is a keen mountain-biker. This is an example of a non-work factor that may add to Donna's risk of muscle fatigue at work.

This scenario shows that Donna is exposed to many risk factors. The nature of these factors and how they interact may vary from day-to-day.

How these factors interact and combine may affect Donna's risk of harm.

How to manage the risk of WRMSDs?

Under the Health and Safety at Work Act 2015 (HSWA), a person conducting a business or undertaking (PCBU) must, so far as reasonably practicable, keep workers and others exposed to their work healthy and safe.

This means PCBUs must, so far as reasonably practicable, manage health and safety risks, including risks associated with WRMSDs.

Since there are many factors that could increase the risk of WRMSDs, there are many control measures PCBUs can put in place to eliminate or minimise the risk of harm.

More than one PCBU can have a duty in relation to the same matter (overlapping duties). PCBUs with overlapping duties must, so far as is reasonably practicable, consult, cooperate and coordinate activities with other PCBUs so that they can all meet their joint responsibilities. For more information, see [Overlapping duties – quick guide](#)

Identify the hazards and risk

The first step is to identify the hazards and risks workers are exposed to.

Understanding risk factors that could lead to WRMSDs and identifying them in the workplace will help PCBUs choose suitable control measures.

PCBUs must, so far as reasonably practicable, engage with their workers and worker representatives and should include workers in the risk assessment processes.

Implement control measures

Once a PCBU identifies a work-related risk, they must so far as be reasonably practicable, eliminate those risks. If a risk can't be eliminated, it must be minimised.

PCBUs must, minimise risks by implementing effective control measures.

PCBUs can use the hierarchy of controls to help them work out the most effective control measures (see Figure 1). PCBUs should select controls higher up the hierarchy of controls rather than relying on administrative controls like policies, procedures, or guidance.

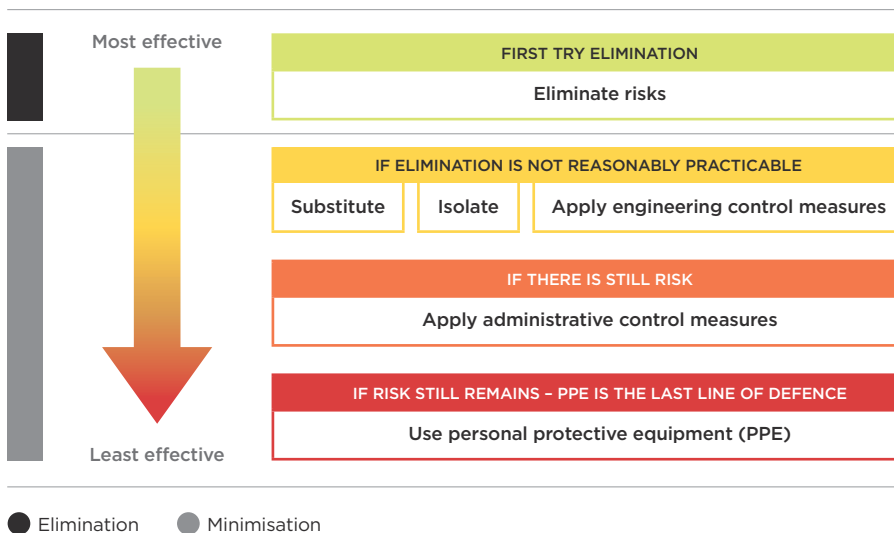


FIGURE 2: Hierarchy of controls

PCBUs should follow good workplace design principles to control WRMSDs.

Examples of controls for WRMSDs associated with hazardous manual tasks:

- **elimination** - automate a process or task so that people don't have to handle loads (for example, a machine that automatically transfers boxes from conveyor to pallet)
- **substitution** - reduce load weights by replacing large heavy containers with smaller ones that are easier to handle
- **engineering** - have easily adjustable workstations to suit workers of different heights and allow different work methods/product types
- **administrative** - make sure workers have received training on how to do their job and any equipment they need to use.

Review and monitor control measures

Control measures should:

- remain effective
- be fit-for-purpose
- be suitable for the nature and duration of the work, and
- be implemented by workers correctly.

PCBUs must monitor:

- the performance of control measures to make sure that control measures are effective, and no new risks have been introduced
- workplace conditions and worker health, so far as is reasonably practicable.

If there are new risks, PCBUs must review their control measures in place and may need to introduce new controls to make sure that the risks are managed.

Make sure you engage the workers when you make decisions about procedures for monitoring.

To learn more about how to manage work risks, see our guidance [Identifying, assessing and managing work risks](#)