

What are Risk Factors?

Risk factors are defined as factors associated with the demands of a task that can contribute to, or aggravate a musculoskeletal disorder. The risk factors are categorised into 3 groups to explain:

- how they affect the worker and the task demands and
- how they relate to other risk factors.

The three categories of factors are direct, contributing and modifying risk factors.

Direct Risk Factors directly stress the worker's body. These are the risk factors that create or contribute to work related musculoskeletal disorders. The direct risk factors are:

1. Forceful exertions
2. Awkward postures
3. Repetition and duration

Contributing Risk Factors affect how the task is performed. They are the source of the problem or the *cause* of the direct risk factor. Control measures are directed at these risk factors. It is these risk factors that need to be redesigned to eliminate or minimise the impact of the direct risk factor. The contributing risk factors are:

4. Work area design
5. Work environment
6. The handling procedure
7. Characteristics of the person (student)

Modifying Risk Factors contribute to a further *change* in the impact of the direct risk factors. The modifying risk factors are:

8. Characteristics of individual workers such as their physical capacity can modify the effects of the direct risk factors
9. Work organisation modifies the exposure to the direct risk factor

Risk Factors in detail

1. Forceful Exertions

Forceful exertions place high loads on body tissues and are associated with a large percentage of musculoskeletal disorders (injuries). The level of muscular effort needed to perform a task is affected by other factors about the task, for example the posture in which the task is being performed.

Forceful exertions are caused by contributing and modifying risk factors, for example:

- Characteristics of the person being handled i.e. the worker needs to assist a student to stand
- The type of handling procedure i.e. pushing, pulling or carrying
- the work area design i.e. space constraints such as toilet cubicles
- Work organisation i.e. lack of maintenance of equipment

2. Working Postures

Working postures can be static, dynamic, awkward or neutral.

Awkward postures affect the level of muscular effort needed to perform an action and how quickly muscles fatigue. Awkward postures are postures where joints of the body are away from the neutral position. These include: back bent forward, squatting for extended durations, neck bent backwards, arms and shoulders reaching above the shoulder or away from the body, pinch grips with hands and fingers.

Static postures can also be harmful by keeping part of the body in the same position for a long time i.e. back bent forward while assisting a student eat lunch. Fixed positions make the muscles fatigue more quickly than when movement is produced. This is because blood flow is more restricted when the muscle is not regularly contracting and relaxing.

3. Repetition and Duration

Repetition is a major risk factor for musculoskeletal disorders. It usually means the *same* muscles and joints are being moved continuously which can result in:

- increased wear and tear of body tissues due to limited recovery time
- muscle fatigue, which may be followed by an inflammatory response and tissue damage

Duration refers to the length of time a task is performed during a shift.

The risk of injury is increased when repetition and forceful exertions are performed for long durations. The effects of fatigue can damage muscles and other tissues.

4. Work Area Design

The work area is the part of the workplace where a task or action is based. The 'work area' includes furniture and fittings, vehicles and the equipment used by workers performing the action.

A well designed work area can help make a task easy to perform. A poorly designed work area, for example having to work at a surface that is too low, requires more muscular effort and leads to early fatigue. This illustrates how a contributing risk factor (work area design) is the cause of direct risk factors (awkward postures and force).

5. Work Environment

Aspects of the work environment that increase the risks associated with undertaking people handling actions include:

- Slippery and uneven floor surfaces
- Poor housekeeping
- Uncomfortable ambient conditions such as cold or heat
- Inadequate lighting or excessively noisy surroundings

6. The Handling Procedure

The handling procedure refers to the way a task or action is carried out. Different handling procedures result in different working postures and different levels of muscular effort needed. For example, rolling a student will take less effort than lifting them. The selection of the handling procedure can reduce or increase the risk factors.

7. Characteristics of the Person being handled

Unlike other general manual handling tasks, people handling also requires the safety, privacy and dignity of the person being handled to be considered. Individual characteristics about the person may also increase the risk of injury due to:

- physical characteristics e.g. weight, size
- state of arousal e.g. consciousness
- unpredictable behaviour
- willingness of the person to assist
- ability to communicate and understand

8. Characteristics of the Individual worker

Individual factors about the worker can influence the level of risk associated with performing the people handling tasks. They include;

Competency - a lack of skills or competence to do the task may increase the risk of injury.

Physical Capabilities – an overload situation may result from a mismatch between a worker and the task. Factors that influence physical capabilities include:

- existing injuries
- physical maturity, e.g. young workers who are still growing
- pregnancy
- fitness for work - new workers or workers returning from long absences

9. Work Organisation

The way work is organised can affect the level of risk workers are exposed to by increasing exposure times and work demands. These aspects include:

- Staffing levels – too few workers for people handling tasks
- Working in isolation – no opportunity for assistance or team handling
- Lack of variability – repetition of the same work demands
- Inadequate rest breaks – limited recovery time
- Extended workdays – long work hours (more than 8 hours)
- Policies and procedures – a lack of, inadequate or not reinforced and followed.

Checklists are sometimes useful to help with identifying risk factors.

A *Risk Factors Checklist* is available in the Manual Handling of Students Resource Package.