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# FACTS

European Agency for Safety and Health at Work

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## Work-related neck and upper limb disorders

### Introduction

Almost two thirds of EU workers report being exposed to repetitive hand and arm movements, and a quarter to vibrations from tools — significant risk factors for work-related neck and upper limb disorders (WRULDs) <sup>(1)</sup>. Many workers, in a wide range of jobs, develop WRULDs and they are the most common form of occupational disease in Europe, accounting for over 45 % of all occupational diseases <sup>(2)</sup>.

Not only do WRULDs cause personal suffering and loss of income, but they also cost businesses and national economies. The cost of WRULDs has been estimated at between 0.5 % and 2 % of gross national product <sup>(3)</sup>.

### What are WRULDs?

Work-related neck and upper limb disorders are impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, bones and the localised blood circulation system, that are caused or aggravated primarily by work and by the environment in which work takes place.

Symptoms of WRULDs may take a long period of time to develop and they can manifest themselves as pain, discomfort, numbness and tingling sensations. Sufferers may also experience swelling in the joints, decreased mobility or grip strength, and a change in skin colour in the hands or fingers.

WRULDs are sometimes called 'sprains or strains', 'repetitive strain injuries', or 'cumulative trauma disorders'. Specific examples include carpal tunnel syndrome, tendinitis and vibration white finger.



### What causes WRULDs?

Physical work involves the application of force, either to move objects or to keep them steady. Whenever work is done with the hands, various sets of muscles in the neck, shoulder, arms and

hands contract. The greater the forces that are needed to handle objects, the greater the muscle forces in the parts of the body involved.

Although some WRULDs result from the acute application of extreme force, most are caused by the effects of many repeated, apparently moderate applications of force, sustained over an extended period. These can result in muscle fatigue and microscopic injuries in the soft tissues of the neck and upper limbs, and WRULDs.

### What are WRULDs risk factors?

The main risk factors are:

- force application resulting in heavy mechanical loads on the neck, shoulders and upper limbs;
- working in awkward positions — muscles have to contract, and greater mechanical loads are placed on the body;
- repetitive movements, especially if they involve the same joints and muscle groups, and if there is an interaction between forceful activities and repetitive movements <sup>(4)</sup>;
- prolonged work without the opportunity to rest and recover from the load;
- local compression of tools and surfaces;
- hand/arm vibration, causing numbness, tingling or loss of sensation, and requiring greater force when gripping.

### Box 1: Activities increasing the risk of developing WRULDs

In the *neck and shoulders*:

- working in positions where the weight of parts of the body has to be supported, or objects held, such as working with elevated arms;
- prolonged work in static postures, involving the continuous contraction of the same muscle groups, e.g. working with microscope;
- repeated lifting of the arms or turning the head to the side.

In the *elbow, wrist and hands*:

- use of great muscular force to handle objects, e.g. grasping with a large grip or pinch grip;
- working with the wrists in deviated postures, e.g. turned inwards or outwards;
- repeating the same wrist movements.

<sup>(1)</sup> European Foundation for the Living and Working Conditions, '4th European working conditions survey', 2005.

<sup>(2)</sup> Eurostat, 'Work and health in the EU: A statistical portrait', Office for Official Publications of the European Communities, Luxembourg, 2004.

<sup>(3)</sup> European Agency for Safety and Health at Work, 'Work-related neck and upper limb musculoskeletal disorders', 1999.

<sup>(4)</sup> Rahman Shiri, Eira Viikari-Juntura, Helena Varonen and Markku Heliövaara, 'Prevalence and Determinants of Lateral and Medial Epicondylitis: A Population Study'. <http://aje.oxfordjournals.org/cgi/content/abstract/164/11/1065>

Further risk factors for WRULDs include the following.

Work environment:

- poor workspace layout, making employees work in awkward positions, poor design of tools and machinery;
- excessive heat, increasing overall fatigue, while excessive cold can make it harder to grip;
- poor lighting, making workers move into awkward positions to see what they are doing;
- high noise levels, causing the body to tense.

Individual factors:

- the physical capacity of workers varies, while previous injuries may make the body more vulnerable;
- lack of experience, training or familiarity with the job;
- ill-fitting clothing or personal protective equipment can restrict postures or increase the force necessary to work;
- host factors, e.g. smoking, obesity <sup>(\*)</sup>.

Organisational and psychosocial factors:

- monotonous jobs or high pace of work;
- time pressure;
- lack of control over the tasks performed;
- limited opportunities for social interaction, or little support from their managers and colleagues.

All of these factors may act separately, but the risk is greater if several risk factors work together.

### Risk assessment for WRULDs

Employers are legally required to evaluate the workplace risks, and act to safeguard the safety and health of workers and others who may be harmed. This process is called risk assessment.

Good risk assessment helps to reduce the costs to businesses from lost output, compensation claims and higher insurance premiums.

A step-by-step risk assessment approach involves:

- looking for hazards: identify all hazards or combinations of hazards that may lead to WRULDs;
- considering who may be harmed and how this might happen: think about everyone who may be hurt;
- evaluating the risks, and deciding on actions as to whether:
  - the hazard can be removed completely,
  - the risk can be controlled,
  - protective measures can be put in place to protect the whole workforce,
  - personal protective equipment is required;
- monitoring the risks, and reviewing preventive actions.

### Prevention of WRULDs

After completing the risk assessment, a list of measures should be made in order of priority, and workers and their representatives

involved in implementing them. Actions should focus on prevention, but also on measures to minimise the seriousness of any injury.

It is important to ensure that all workers receive appropriate information, education and training on health and safety in the workplace, and know how to avoid specific hazards and risks.

Measures may cover the following areas.

- The workplace: can the layout be improved?
- Work equipment: are tools ergonomically designed? Can non-vibrating powered tools be used to reduce the force required for certain tasks?
- Work tasks: can the physical demands of the job be reduced, using new tools or working methods?
- Work management: can work be planned or allocated better and safer systems of work implemented?
- Work organisation: can better work/rest ratios or job rotation be arranged? Can a better safety culture be promoted at corporate level?
- Design and procurement: can hazards be eliminated in the planning stage?
- Workplace health promotion, e.g. preventing smoking and obesity.

Worker involvement is essential when tackling workplace hazards. The workforce and their representatives know the workplace as well as anyone.

### European legislation

EU legislation makes employers responsible for minimising risks to workers' health and safety. The most important European directives concerning WRULDs are listed in Box 2. Other European directives, standards and guidelines, and provisions within individual Member States, may also be relevant to the prevention of WRULDs <sup>(\*)</sup>.

#### Box 2: Main European directives relevant to preventing WRULDs

- 89/391/EEC: covers the measures to encourage improvements in the safety and health of workers
- 90/270/EEC: covers the minimum health and safety requirements for work with display screen equipment
- 90/269/EEC: covers the identification and prevention of manual handling risks

**More information** on WRULDs prevention is available at: [http://europe.osha.eu.int/good\\_practice/risks/msd/](http://europe.osha.eu.int/good_practice/risks/msd/)

**More information** on Agency publications is available at <http://osha.europa.eu/publications>

<sup>(\*)</sup> Agency website links to European legislation relevant to MSDs <http://osha.europa.eu/topics/msds/>, EU legislation relating to workers protection, <http://osha.europa.eu/legislation>, and to Member State sites where national legislation and guidelines may be found.

**European Agency for Safety and Health at Work**

Gran Vía, 33, E-48009 Bilbao

Tel. (+34) 94 479 43 60, fax (+34) 94 479 43 83

E-mail: [information@osha.europa.eu](mailto:information@osha.europa.eu)

