



Hairdressing and MSD: Workers health, Health risks, and assessment methods

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European Working Conditions Survey summary

- back pain: 24.7% of workers
- muscle pain: 22.8% of workers
- work in the body's tiring position: 45.5% of workers
- handling heavy loads: 35% of workers



Why is this important?

6th European Working Conditions Survey results

Work related MSD represent more than 50% of all occupational diseases in Europe

The most common are:

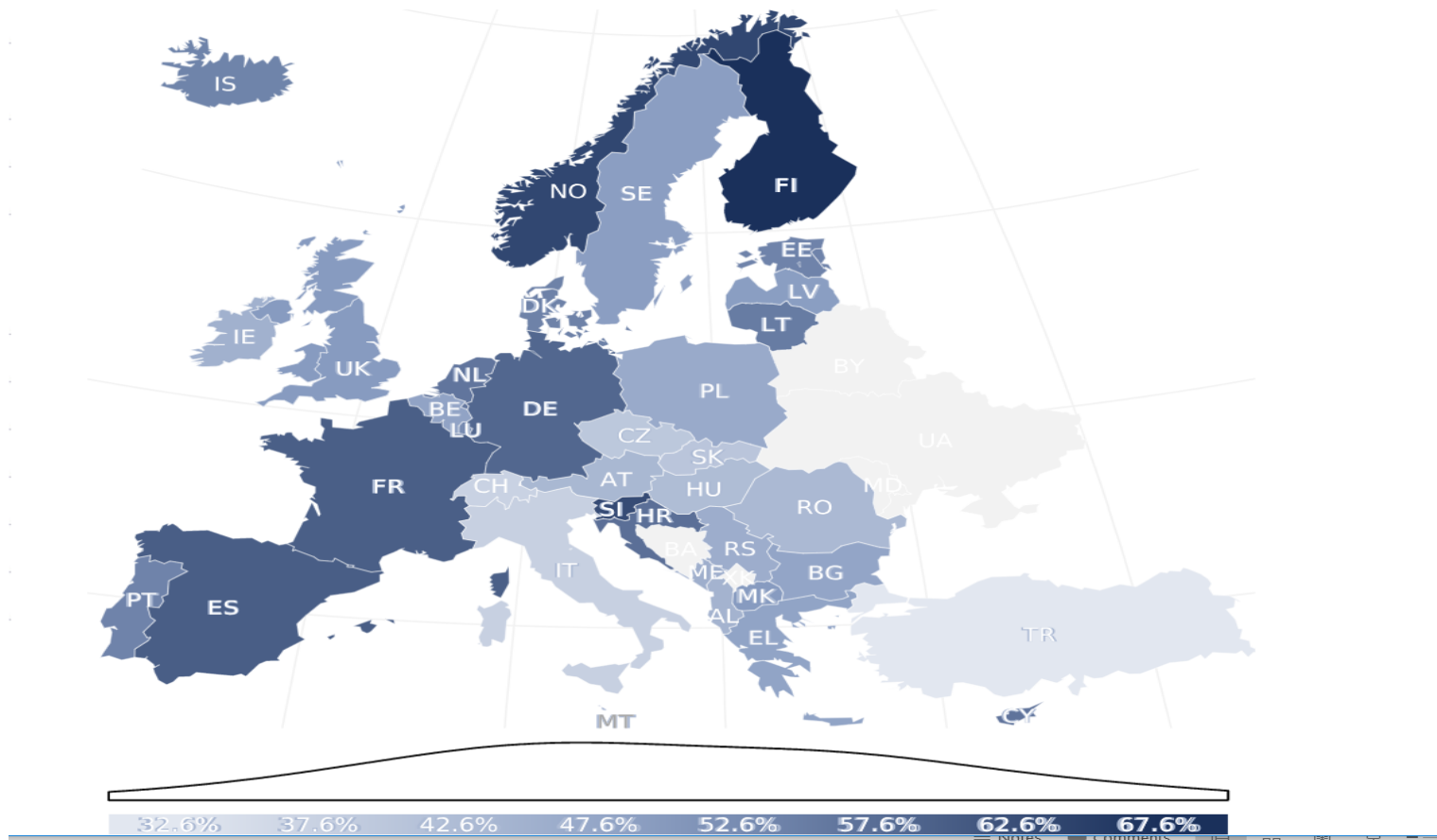
tenosynovitis of the wrist

epicondylitis of the elbow

carpal tunnel syndrome

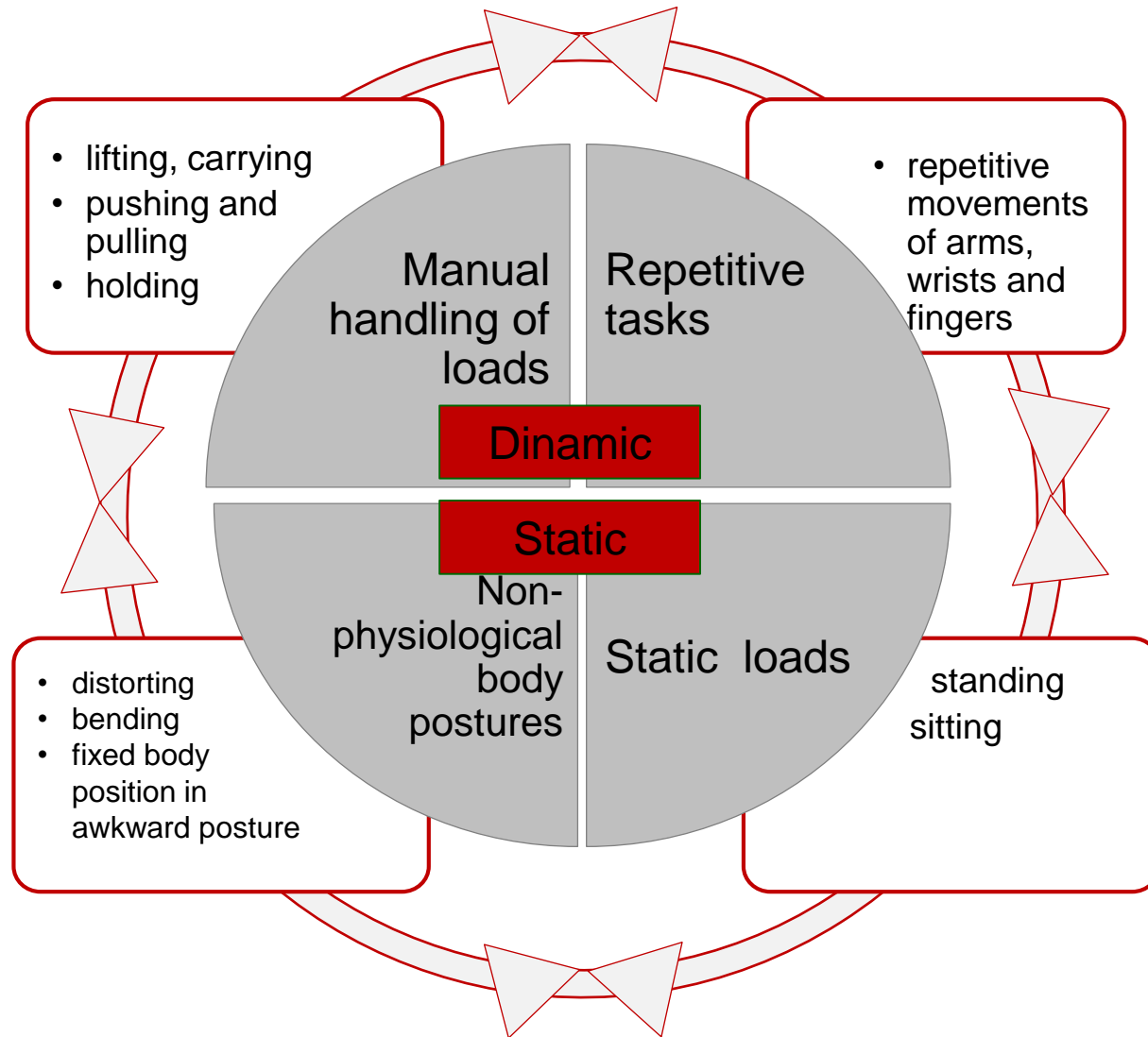
Approximately 60% of the work-related diseases are musculoskeletal disorders, thus prevention at workplace is extremely important

Repetitive hand or arm movements EU



European Working Conditions Survey 2015

Activities and postures posing risks of work-related musculoskeletal disorders



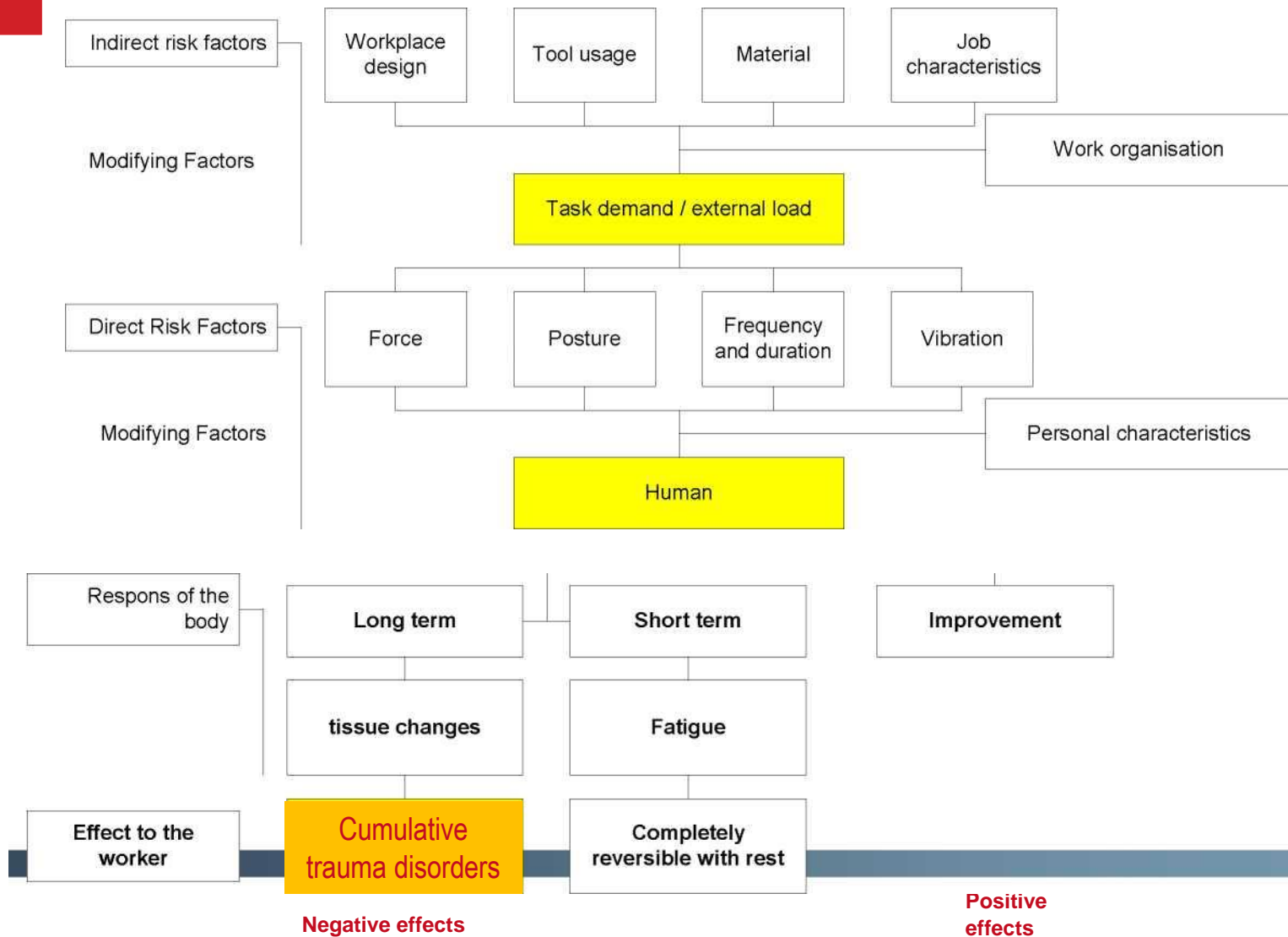


Ergonomics

scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.
(International Ergonomics Association, 2000)

ISO 26800:2011 - Ergonomics -- General approach, principles and concepts

Factors to affect the risks of work-related musculoskeletal disorders





Effects of disproportions

- disproportion between wear (work) and recovery leads to:
 1. weakness
 2. numbness
 3. pain
 4. loss of function

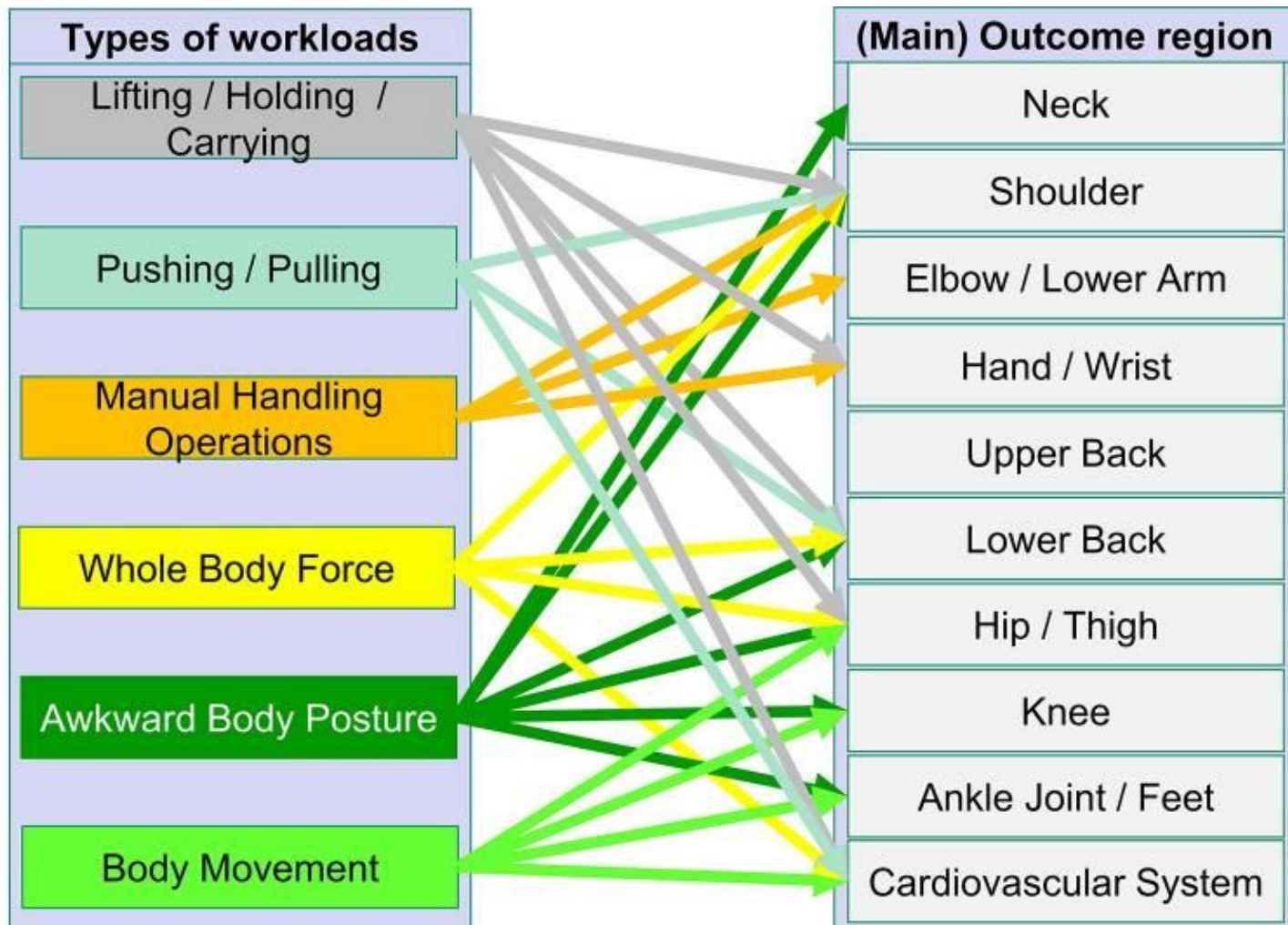
They cause on average:

7 million lost working days

EUR 710 million EUR of overall costs



Multiplaying disporoportion, outcomes



Klussmann A, Liebers F, Brandstädt F, Schust M, Serafin P, Schäfer A, Gebhardt H, Hartmann B, Steinberg U. Validation of newly developed and redesigned key indicator methods for assessment of different working conditions with physical workloads based on mixed-methods design: a study protocol BMJ Open. 2017; 7(8): e015412.

Parts of body at risk

Cervical/cervicocephal syndrome
Cervicobrachial syndrome

Rotator cuff syndrome, adhesive capsulitis of shoulder
Medial and lateral epicondylitis
Flexor/extensor peritendinitis/tendosynovitis of forearm/wrist region
Carpal tunnel syndrome
Osteoarthritis of the joints of the distal upper extremities

Neck
Arms
Back
Legs

Disorders of the lower back
Low back pain/lumbago
Lumbar facet syndrome—pseudo-radicular syndrome
Lumbar radicular syndrome

Disease of the lower extremities
Hip osteoarthritis
Knee osteoarthritis (including chondromalacia patellae)
Meniscus lesion
Static insufficiency of foot
Varicosis of the leg veins

Klussmann A, Liebers F, Brandstädt F, Schust M, Serafin P, Schäfer A, Gebhardt H, Hartmann B, Steinberg U. Validation of newly developed and redesigned key indicator methods for assessment of different working conditions with physical workloads based on mixed-methods design: a study protocol BMJ Open. 2017; 7(8): e015412.



Hairdressing

- Hairdressers have several work-related health hazards, not much is known of their strategies for improvement of the work environment
 - Work environment: ventilation, musculoskeletal and psychosocial strain, exposure to hair products, possible financial issues, concern for having to leave the profession in case of losing capacity for work
 - Hazards: chemicals, awkward body postures, repetitive movements most frequent causes of discomfort and for some had caused a work-related disease
-
- Leino T, Kähkönen E, Saarinen L, Henriks-Eckerman ML, Paakkulainen H. Working conditions and health in hairdressing salons. *Appl Occup Environ Hyg.* 1999 Jan;14(1):26-33.
 - Diab KK1, Nielsen J, Andersson E. Swedish female hairdressers' views on their work environment--a qualitative study. *J Occup Health.* 2014;56(2):100-10.



Work and health in hairdressing

- Approximately 25% of the reported work-related illnesses were associated with chemicals, and more than 50% of these concerned skin diseases
- Hair dye and bleaching powder are reported as the cause of skin diseases and allergies
- Injuries related to physical strain were the most common: greater prevalence of work-related symptoms in the shoulders, wrists, hands and lower and upper back, pain in the legs and feet

Arbetsmiljöverket Efs, 112 79 Stockholm. Frisörer och hudterapeuter; Hairdressers and esthetucians. Korta arbetsskadefakta; Short Work Injury Facts2010 (10).

Diab KK1, Nielsen J, Andersson E. Swedish female hairdressers' views on their work environment--a qualitative study. J Occup Health. 2014;56(2):100-10.



Prevention tailor made for a worker

- Education about risks and risk assessment
- Organizational methods
- Exercise (stretching) - reduces excessive load of muscles
- Massage – stimulates blood circulation
- Kinesiotaping – supports tendons, improves muscular function
- Use of PPE



Preventive measures at workplaces

- appropriate health education in addition to health risk assessment: providing education to workers enhancing prevention measures and raising awareness of workers for high risk working tasks that are harmful for their health and workability
- rotation of working tasks
- avoiding the peak physical and mental strain during work
- using suitable ergonomic tools and when needed, using personal protective equipment



Which risk assessment method is the good one?

A paper-pencil method which is easy to use for anyone after some practice, and which gives a simple evaluation after a separate determination of the different ergonomic risks.

A workbook which allows detailed assessments and provide risk levels in borderline cases, according to the standard methods given a detailed evaluation, which method occupational safety and health professionals can use after a few days training.

An imaging-based method, which is based on observations of real activity



What else needs to be considered

- Personal details including sociodemographic data (eg, age, gender, years on the job, leisure time activities), general information about current and former occupational activities (eg, type and amount of physical workload, time pressure, shift work, working posture);
- Subjective assessments of the exposure in the workplace
- Other psychosocial aspects (eg, job satisfaction, social support), commitment; extract from the COpenhagen PPsychOsocial Questionnaire;
- Subjective perceived exertion of physical workload (Borg scale).



How to choose?

The method according to EN 1005 series of standards for appropriate assessment of the elements, like:

posture

manual handling

effort/strain/force

repetition

what else is important:

Subjective discomfort,

Workplace history,

Improvement ideas



EN 1005, Safety of machinery - Human physical performance –

- Part 1: Terms and definitions
- Part 2: Manual handling of machinery and component parts of machinery
- Part 3: Recommended force limits for machinery operation
- Part 4: Evaluation of working postures and movements in relation to machinery
- Part 5: Risk assessment for repetitive handling at high frequency



Why use anything?

The occurrence of Shoulder impingement syndrome (SIS)

associated with:

force requirements >10% maximal voluntary contraction (MVC), lifting >20 kg >10 times/day, and high-level of hand force >1 hour/day (OR 2.8-4.2).

repetitive movements of the shoulder, repetitive motion of the hand/wrist >2 hours/day, hand-arm vibration, and working with hand above shoulder level showed an association with SIS (OR 1.04-4.7)

upper-arm flexion > or =45 degrees > or =15% of time (OR 2.43) and duty cycle of forceful exertions > or =9% time or duty cycle of forceful pinch >0% of time (OR 2.66).

High psychosocial job demand was also associated with SIS (OR 1.5-3.19).

van Rijn RM, Huisstede BM, Koes BW, Burdorf A. Associations between work-related factors and specific disorders of the shoulder-a systematic review of the literature. Scand J Work Environ Health. 2010 May;36(3):189-201



Why use anything?

Carpal tunnel syndrome-results of a meta-analysis

- risk factors significantly associated with an increased risk of CTS among exposed workers were:
 - vibration [odds ratio (OR) 5.40; 95% CI 3.14, 9.31],
 - hand force (OR 4.23; 95% CI 1.53, 11.68)
 - repetition (OR 2.26; 95% CI 1.73, 2.94).

Barcenilla A, March LM, Chen JS, Sambrook PN. Carpal tunnel syndrome and its relationship to occupation: a meta-analysis. *Rheumatology (Oxford)*. 2012 Feb;51(2):250-61.



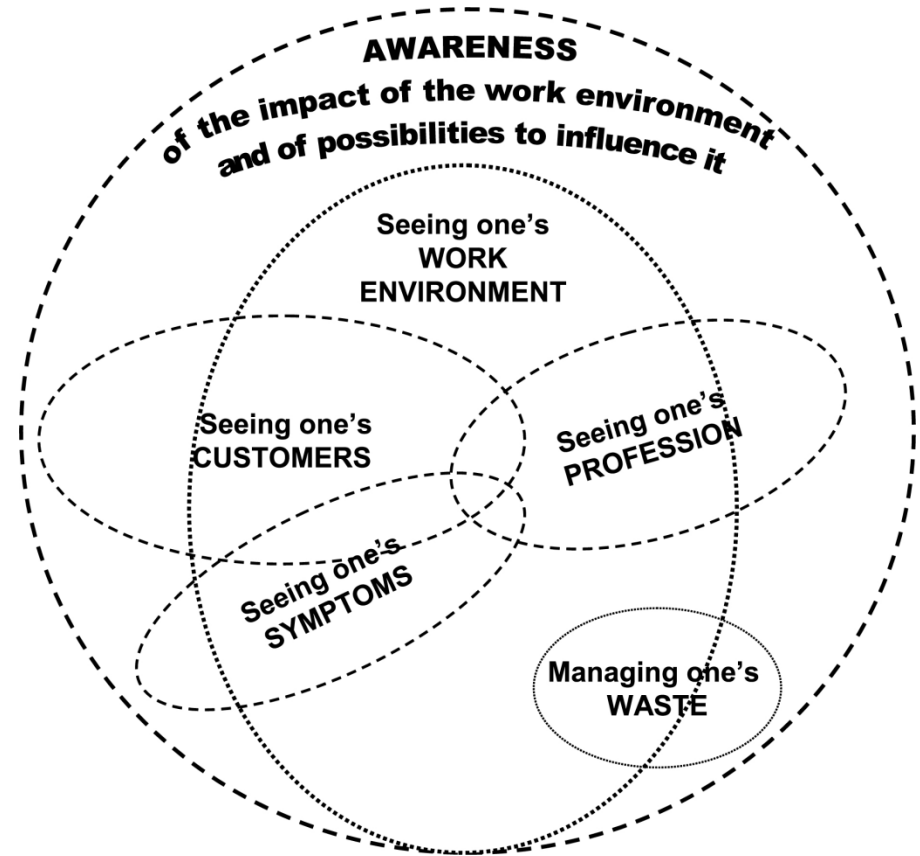
The hairdresser's views on their work environment

Appropriate health education and risk assessment are important for reduction of occupational illnesses in hairdressing

Measures and initiatives by responsible authorities – a way to increase knowledge of the existing regulations.

Suppliers use **fewer chemicals** in their products, while retaining the qualities that the customers desire so that the hairdresser and the customer will both be satisfied with the result.

The **work environment** should be given greater consideration and become an important factor in the hairdresser's working life





Instead of conclusion

- create awareness for poor ergonomics and WMSDs as a possible consequence (especially SMEs)
- show that good ergonomics & high productivity are linked to each other
- transform standards into easy applicable methods
- develop risk assessment tools for longer cycle times or non-cyclic work – to evaluate successive superposition of physical workload



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