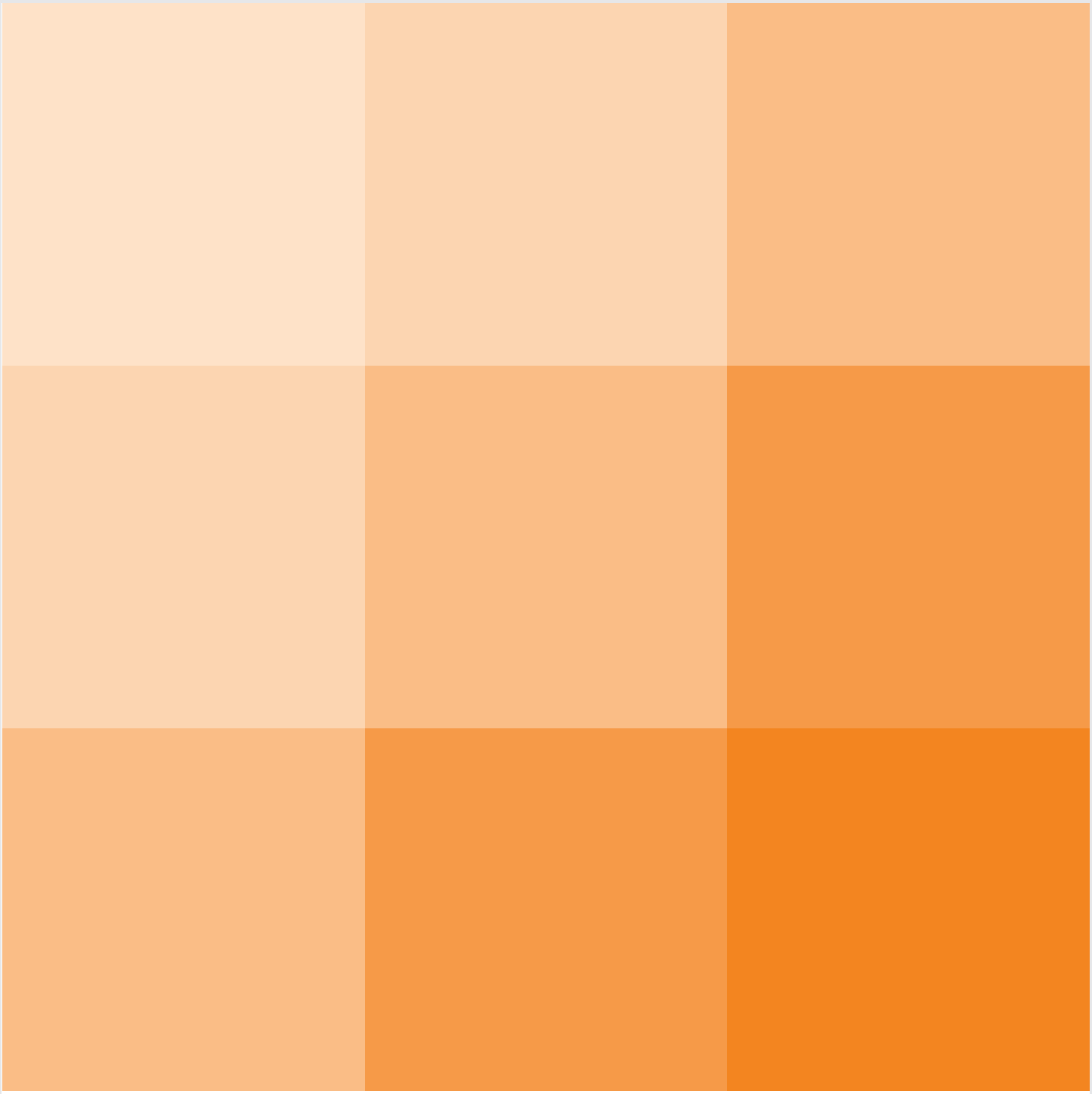

Quick Exposure Check (QEC)

Reference Guide

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Introduction

Work related musculoskeletal disorders

Work related musculoskeletal disorders (WMSDs) are a common health problem throughout the industrialised world and a major cause of disability. WMSDs are conditions of the nerves, tendons, muscles, and supporting structures of the musculoskeletal system that can result in fatigue, discomfort, pain, local swelling, or numbness and tingling. WMSDs usually develop from cumulative damage resulting from months or years of exposure to excessive levels of physical and psychosocial stressors at work.

Scientific evidence has shown that physical and psychosocial factors are critical in the development of WMSDs.

The major risk factors for WMSDs in the workplace include:

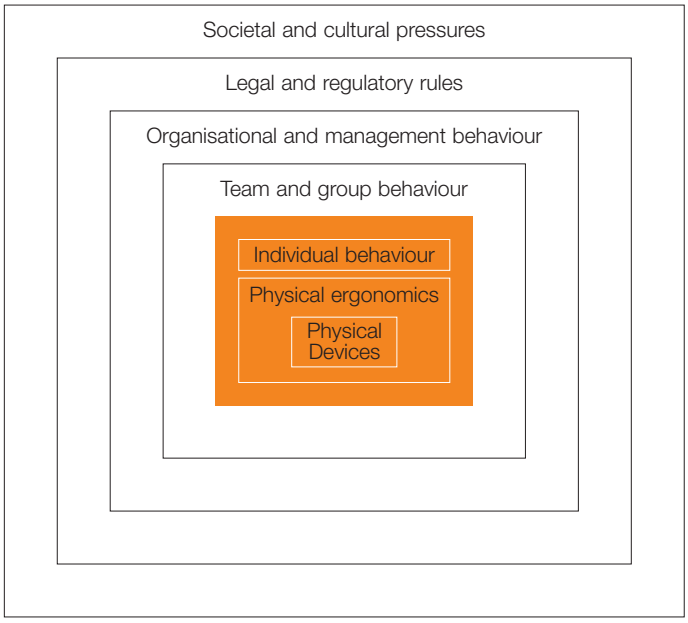
- heavy manual handling
- repetitive and forceful actions
- vibration
- awkward static postures that arise from badly designed workstations, tools, equipment, working methods
- poor work organisation.

Exposure to such factors produces effects within the worker's body (e.g. decreased blood flow or local muscle fatigue). If adequate recovery does not take place, it can lead to the development of WMSDs.

The ergonomics approach

The ergonomics approach to reducing musculoskeletal disorders requires the holistic assessment of all elements of the work system so that optimal solutions can be achieved (see diagram below). This requires the full range of generic issues to be considered, such as task design, worker/equipment interface, individual variation (including motivation) and organisational culture, training needs, work organisation and legal requirements. This approach ensures that the needs of all relevant user groups within the organisation are addressed.

The Quick Exposure Check fits within this approach at the level of the individual(s) in the work system and enables their exposure to a range of risk factors for WMSD to be assessed. It is important that the issues depicted in the outer levels of the diagram are also addressed using appropriate ergonomic techniques and that interventions should be considered at all levels.



(after Moray, 2000)

Quick Exposure Check (QEC)

QEC assesses the exposure of the four body areas at greatest risk to the most important risk factors for WMSDs. QEC has been developed for use by Occupational Safety and Health practitioners, safety representatives or those responsible for health and safety in Small and Medium Enterprises (SMEs) to:

- assess the change in exposure to musculoskeletal risk factors before and after an ergonomic intervention
- involve both the practitioner (observer) and the workers (who have direct experience of performing the job) in conducting the assessment and identifying possibilities for change
- encourage improvement of workplaces and allow consideration of the comparative impact and potential cost benefits of a number of alternative interventions
- increase awareness among managers, engineers, designers, health and safety practitioners and workers about musculoskeletal risk factors in the workplace
- compare exposures between two or more people performing the same task, or between people performing different tasks.

The QEC assessment encourages consideration of changes to workstations, tools, equipment and working methods to eliminate, or at least minimise, levels of exposure. This should be done in discussion with the worker(s). Those who have regular involvement in performing the task may have good suggestions for improvement. Consultation at this stage will assist with the introduction of change in the workplace.

When a change has been made, exposure should be re-assessed to confirm the efficacy of the intervention in reducing the risk factors for WMSDs. This can be done immediately following the change rather than waiting for changes in the prevalence of reported WMSDs to become evident which may take many months.

Getting started and using QEC effectively

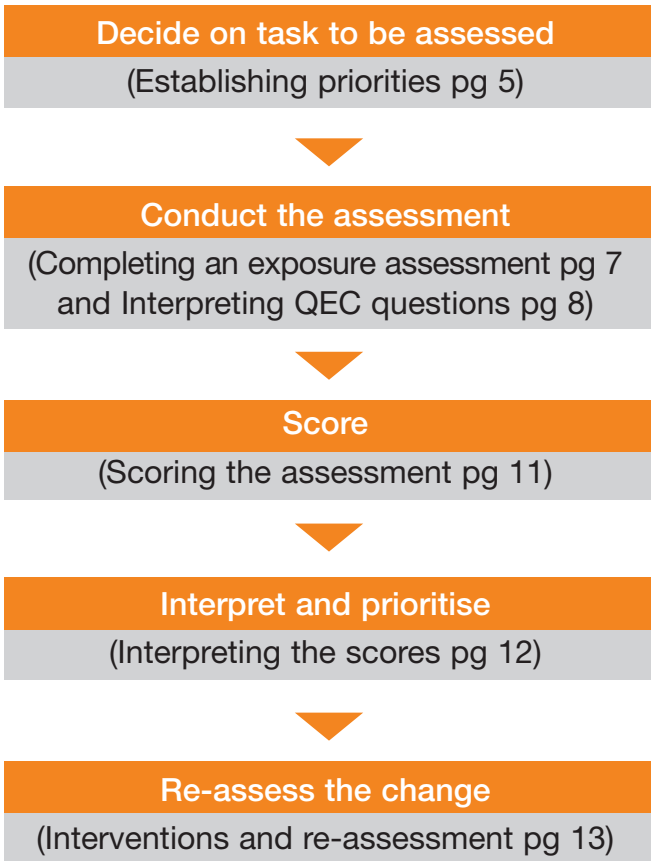
Role of this guide

QEC allows physical work activities to be assessed in collaboration with the worker. It has been designed to be quick, easy to use and not require extensive training before use.

A one-page assessment sheet includes questions for both the practitioner (observer) and the worker to quantify exposure to risk for WMSDs. The exposure levels for four main areas of the body can be scored and these can form a basis for intervention and re-assessment. See sample QEC Assessment Form at the end of this Guide.

The guide aims to:

- provide background to QEC
- present information on how to prioritise tasks for assessment and conduct basic task analysis
- explain each question and describe the range of answers
- show how to score assessments
- encourage a systems approach to making interventions.



Establishing priorities

Initially, it is necessary to set priorities for assessment. You may be asked by a worker, a supervisor or a manager to carry out an assessment because of the problems reported by or to them about pain, sickness absence or low productivity for one specific operation. Alternatively, you may be required to carry out assessments as part of your responsibilities to survey a range of jobs and tasks conducted by workers at different locations within your organisation.

If you are directed to a specific task, then begin there and carry out assessments of additional tasks within that job if time allows. If a more general survey has been requested then it may be difficult to decide where and how to start. It is important to set priorities and use resources effectively and the following approaches are suggested:

(a) It may be possible to conduct a workplace survey about pain and discomfort, and focus on those situations where the prevalence of problems is highest (you could use checklists and body maps for this, for example go to the following websites:

http://ergo.human.cornell.edu/ or
http://www.hazards.org/tools/index.htm

(b) Organise a representative group of workers to review the work performed and identify five tasks with the highest priority.

(c) Alternatively, if time permits, begin your survey by talking with workers individually and asking them to describe what they do.

- Ask the worker to describe the organisation of their day by hours with breaks.
- Ask them to list the tasks performed and map them onto a plan. Record the task duration.
- Define repetitive and non-repetitive activities within each task.
- Identify actions performed in each task.
- Define cycles and the frequency of repetitive tasks.
- Confirm the information with more than one worker and ask about:
  - a typical day and variations from the norm
  - downtime and stoppages
  - non scheduled breaks
  - any additional/unusual tasks performed at different times in the month/year.
- Carry out assessments for tasks identified.

See over for example >

Example of tasks performed daily by a laboratory technician

For each job ask them to describe the organisation of their day by hours with breaks:

Time duration	Hour 1		Hour 2		Hour 3		Hour 4	Hour 5	Hour 6		Hour 7		Hour 8
Task	admin.	pipetting	pipetting	rest delivery	Sample	pipetting	pipetting	Lunch	pipetting	admin	Rest	Clean equipment as delivery delay	Media prep and administration

Then look at tasks in more detail:

Tasks	Repetitive (R) or not (NR)?	Equipment	Actions performed in task	Cycle length	Frequency of cycle (seconds)	Total duration throughout day (mins)	Other
Pipetting	R	Pipette	- Place tip in fluid - Depress plunger - Withdraw sample - Transfer/expel sample to well	3	20 per min	240	Delay in sample delivery caused interruption to pipetting task and equipment cleaning task substituted
Admin	R	Computer	- data entry	10	6	90	
Sample delivery recording	NR	Date stamp	- record delivery - unpack samples - record classification no.			30	

Completing an exposure assessment

In order to conduct an exposure assessment, it is necessary to decide what task or part of task you will assess (see page 5). If you observe one repetitive task, it is suggested that you observe the task for 20/30 cycles before completing the form. It should take approximately 10 minutes to make the assessment. Where daily patterns of work and job demands vary, observe workers more than once. For group work, ensure a sufficiently representative number of individual workers are assessed. Re-observation may be necessary to confirm judgements made.

1. Introduce yourself and explain the aims of the exposure assessment.

2. Enter the details on the front sheet: worker's name, job title, task, assessor's name, date and time of assessment in the space provided. Leave 'Action required' blank until you have completed the exposure assessment.

3. Answer each question with respect to the task you have selected to assess.

4. For each question in the Observer's Assessment place a tick in the most appropriate shaded box for questions A-G based on your observation of posture and movement of the back, shoulder/arm, wrist/hand and neck. The graduation in shading for each question indicates an increase of exposure to risk.

5. Assess the 'worst case' for each body area. For example:
   - the assessment for back posture should be made at the moment when the back is most heavily loaded, i.e. when the person leans or reaches forward to pick up the load.
   - the assessment of frequency of motion should be recorded when a production line is at full speed.

6. If you do not have a clear view of the worker, change your position or ask the worker to demonstrate the posture. If the person is crouching or kneeling this may pose additional risks and may need to be investigated in a supplementary assessment.

7. For the Worker's Assessment, ask the worker to answer the questions and then place a tick in the appropriate box. The graduation in shading for each question indicates an increase of exposure to risk.

8. The worker's answer may differ from the actual answer and the observer may want to carry out some measures to inform any intervention that may be introduced e.g. by measuring the weight of the load. However, this measure should be used to supplement the exposure assessment and not to replace the worker's assessment of the load, as workers' opinions are very important.

9. In three questions on the Worker's Assessment (L, P, Q), you should ask the worker for more detail if appropriate as a basis for identifying the nature of the problem and opening a dialogue to seek solutions. This information can be recorded in the box at the bottom of the page. This area can also be used to record other observations made during the assessment.

10. Providing immediate feedback to workers after you have assessed the task can be useful in terms of credibility and also to encourage suggestions for improvements. These could be incorporated into the Action Required section on the front of QEC. The graduation in shading for each question indicates an increase of possible risk and this can helpful in telling the worker where particular problems lie.

11. Score assessment (Page 11).

12. Enter Actions Required on the front of the form.

13. After an intervention has been made, another exposure assessment should be conducted to assess the change in exposure to risk factors for WMSDs (see pages 12 and 13).

Interpreting QEC questions

Observer's assessment

If in doubt when conducting the assessment, opt for the higher exposure category.

Assessment of the back

Back posture (A1-A3)

The assessment for back posture should be made at the moment when the back is most heavily loaded.

For example, when lifting a box the back is under highest loading when the person leans or reaches forward, or bends down to pick up the load.

Almost neutral (A1)

- The back is defined as almost neutral (A1) if it is in less than 20 of flexion/extension, twisting, or side bending.



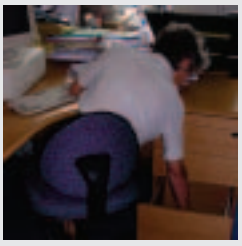
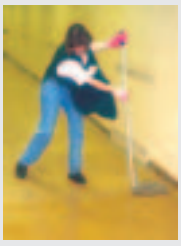
Moderately flexed/twisted side bent (A2)

- The back is defined as moderately flexed or twisted or side bent (A2) if it is in more than 20 but less than 60 of flexion/extension, twisting or side bending.



Excessively flexed/twisted side bent (A3)

- The back is defined as excessively flexed or twisted or side bent (A3) if it is in more than 60 of flexion, twisting or side bending.

Back movement (B1-B5)

Select ONLY one of the two task options:

- If you are assessing a standing or seated stationary task (e.g. sedentary work, repetitive tasks), assess B1-B2 and ignore B3-B5. If the back is static for most of the time, select B2.
- If you are assessing a lifting, pushing/pulling or carrying task (i.e. moving a load by moving the back), assess B3-B5 and ignore B1-B2. This question refers to how often the person needs to bend or rotate the back when performing these types of manual handling tasks. For example, when unloading boxes from a pallet, count the number of times per minute the individual's back moves to lift and lower the load. Then select the most appropriate category B3-B5.

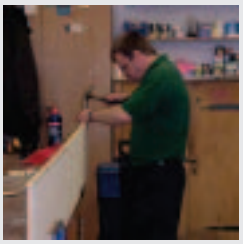
Assessment of the shoulder/arm

Shoulder/arm position (C1-C3)

The assessment should be based upon the position of the hands when the shoulder/arms are most heavily loaded during work.

This may not necessarily be at the same time as when the exposure of the back is assessed. For example, the load on the shoulder may not be at the highest level when the person bends down to pick up a box from the floor, but may become greater subsequently when the box is placed at a higher level.

Hands at or below waist height (C1)



Hands at about chest height (C2)

Hands at or above shoulder height (C3)

Shoulder/arm movement (D1-D3)

The movement of the shoulder/arm is defined as:

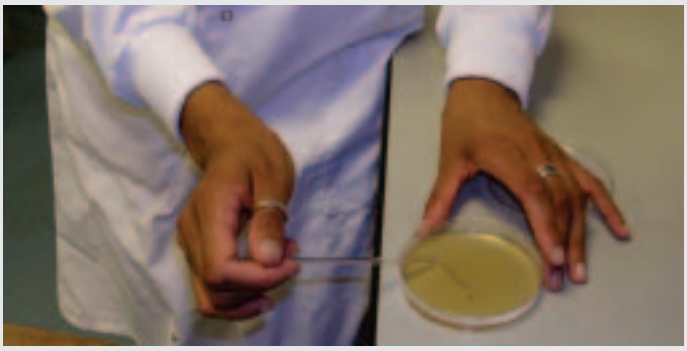
- Infrequent (D1) if there is some intermittent movement.
- Frequent (D2) if there is a regular movement with some pauses.
- Very frequent (D3) if there is almost continuous movement.

Assessment of the wrist/hand

Wrist/hand posture (E1-E2)

This posture is assessed during the task when the most awkward wrist posture is adopted. This may be wrist flexion/extension, side bending (ulnar/radial deviation).

The wrist is regarded as almost straight (E1) if the movement is limited within a small angular range (e.g. less 15 of the neutral wrist posture. Otherwise, if an obvious wrist angle can be observed during the performance of the task, the wrist is considered to be deviated or bent (E2).



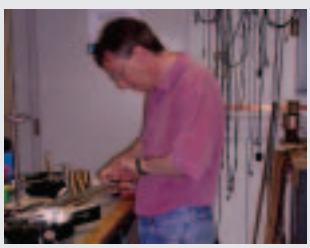
The wrist is deviated or bent (E2)

Wrist/hand movement (F1-F3)

This refers to the movement of the wrist/hand and forearm, excluding the movement of the fingers. One motion is counted every time the same or similar motion pattern is repeated over a set period of time (e.g. 1 minute).

Assessment of the neck (G)

The neck posture is defined as excessively bent or twisted if the angle is greater than 20˚ relative to the torso. If this angle is exceeded select either G2 or G3 dependent upon the duration. Otherwise select G1.



Neck excessively bent (G)

Worker's assessment of the same task

The worker's responses are an integral part of the assessment and it is important that they answer each question based on their experience of doing the work. Explain the meaning of the questions and list the response categories. If the worker is in doubt, opt for the higher exposure category.

Maximum weight handled (H1-H4)

This question refers to the weight borne by the worker, and not the maximum weight handled in the task or the load handled with the use of equipment.

The worker's perception of the load weight may differ from the actual weight category, e.g. a light load may seem heavy if held at full reach. The actual weight of the load can be measured by the observer if required, to inform any intervention that may be introduced. However, this measure should be used to supplement the exposure assessment and not to replace the worker's assessment of the load.

Time spent on task (J1-J3)

This question examines the amount of time per day the worker spends conducting the task being assessed.

Maximum force level (K1-K3)

This question refers to the maximum force level exerted by one hand when performing the task. Even if the task is performed with two hands, ask the worker about the force for one hand only.

Measures of the forces involved can be made by the observer to inform any intervention that may be introduced. However, this measure should be used to supplement the exposure assessment and not to replace the worker's perception of the force required to perform the task.

Visual demand (L1-L2)

Ask the worker to specify if the level of visual demand of the task is 'low' (almost no need to view fine details) or 'high' (need to view some fine details). If the requirement is 'high', ask for more information about this aspect of the task. Record this in the space at the bottom of the page.

Driving (M1-M3)

This question investigates whole-body vibration that may result from driving a vehicle at work. The worker is asked to estimate total time spent driving a vehicle during the working day. If the worker does not drive, do not leave the answer blank, place a tick in M1 'Less than one hour per day or Never'. This question only refers to driving at work, do not include driving to and from work.

Vibration (N1-N3)

This question enquires about the hand-arm vibration that may arise from using vibrating tools at work. The worker is asked to estimate the total time spent using vibrating tools during the working day. If the worker does not use vibrating tools, do not leave the answer blank, place a tick in N1 'Less than one hour per day or Never'.

Work pace (P1-P3)

This question asks about the difficulties that workers may have keeping up with their work. If the answer is 'often', ask for more information about this aspect of the work. Record this in the space at the bottom of the page.

Stress (Q1-Q4)

This question asks how stressful the worker finds their job. If the answer is 'moderately' or 'very', ask for more information about this aspect of the job. Record this in the space at the bottom of the page.

Scoring the assessment

The QEC Exposure Scores are based on combinations of risk factors identified by the observer for each body area and by the worker's subjective responses. These scores represent a hypothetical relationship between the increased level of exposure and potential health outcomes. Current epidemiological evidence is not sufficient to define the actual relationship for different working situations. Nevertheless the existing scoring system provides a basis for comparing the level of exposure before and after an intervention. In addition, increasing levels of exposure are signified by darker shading in the boxes on both the assessment and the scoring sheets.

The assessment scores should be used to:

- determine the comparative levels of exposure for each body area
- identify where exposures are highest, and consequently, prioritise the issues that interventions should address.

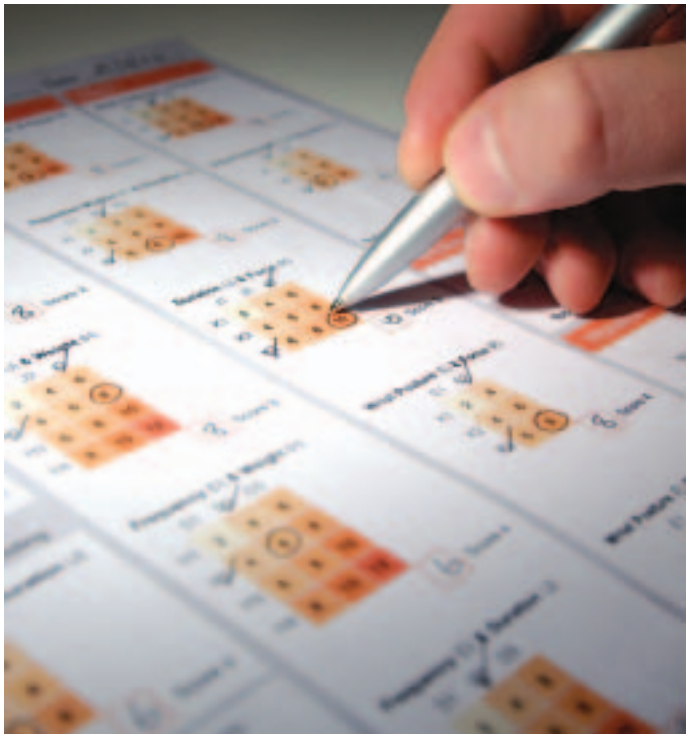
The aim of an intervention is to reduce exposure scores. When changes to a task are planned, an assessment should be done based upon the improvements proposed. This will indicate the potential benefits of the intervention and reveal if the exposure to risk factors for any other body area is increased inadvertently. Re-assessment should always be done following the implementation of any intervention.

To score the exposure assessment

1. Use the Exposure Scores sheet to determine the scores for each body area. For example, at the top left hand corner of the sheet for the Back:
   - The first table shows the scores for combinations Posture (A1-3) and Weight (H1-4). Identify the corresponding exposure combination, e.g. the combination A2 and H2 would score 6, for A3 and H3 score 10. Enter this in the 'Score 1' box at the bottom right-hand corner.
   - Do this for the correct combination of factors for the back, i.e. by calculating either scores 1 to 5 OR scores 1 to 3 plus score 6.
   - Then sum the total scores for the back.

2. Repeat this procedure for each body area and other factors (i.e. driving, vibration etc).

3. Do this following both the initial assessment and any intervention.



Interpreting the scores

Exposure scores for body areas
The total score for each body area is determined from the interactions between the exposure levels for the relevant risk factors (see table below), and their subsequent addition.

Important risk factors	
Back	Wrist/hand
• load weight • duration • frequency of movement • posture	• force • duration • frequency of movement • posture
Shoulder/arm	Neck
• load weight • duration • task height • frequency of movement	• duration • posture • visual demand

It is important to take note of which interactions contribute most to the overall score for each body area.

The exposure scores for the back, shoulder/arm, wrist/hand and neck have been categorised into 4 exposure categories: Low, Moderate, High or Very High.

	Exposure level			
Score	Low	Moderate	High	Very High
Back (static)	8-15	16-22	23-29	29-40
Back (moving)	10-20	21-30	31-40	41-56
Shoulder/arm	10-20	21-30	31-40	41-56
Wrist/hand	10-20	21-30	31-40	41-46
Neck	4-6	8-10	12-14	16-18

Even if the exposure score is Low, it is important to note that one or two interactions may be contributing disproportionately to the score (i.e. a score of 8 or more).

For Moderate, High and Very High scores, there are likely to be several interactions that should be identified and reduced. It is also possible that one or two interactions are at the highest levels (i.e. 10 or 12) of exposure. These should be addressed urgently to reduce the level of exposure for these factors.

These interactions should be monitored and reviewed as injury to the body could occur if exposure continues.

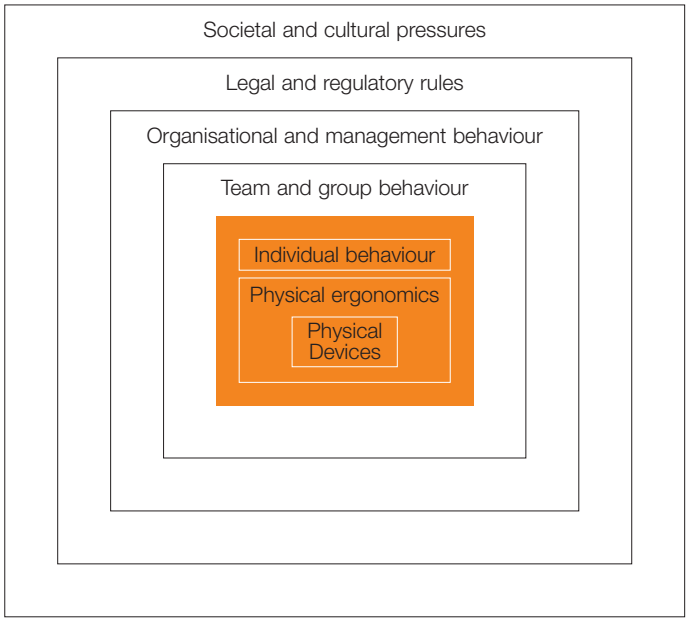
Exposure scores for other factors
The exposure scores for driving, vibration and work pace have been categorised into three exposure categories: Low, Moderate, High. Stress has a fourth category: Very High. Where scores are Moderate or High, or Very High, the level of exposure should be reduced.

	Exposure level			
Score	Low	Moderate	High	Very High
Driving	1	4	9	-
Vibration	1	4	9	-
Work pace	1	4	9	-
Stress	1	4	9	16

Interventions & re-assessment

Interventions

When seeking to make changes to reduce the exposure of workers to known risk factors for WMSDs, it is essential to consider all aspects of the work system so that optimal solutions can be achieved (see diagram below).



(after Moray, 2000)

The ergonomics approach seeks to re-design the work system by considering the full range of relevant issues, including:

- Tasks undertaken
- Job demands
- Equipment or work space
- Interactions between sets of equipment and groups of people
- Work organisation
- Environmental factors
- Overall system goals

QEC is helpful in addressing some aspects of the work system but it will be necessary to collect and use additional information. Appropriate methodologies can be found in a number of reference sources or advice can be sought from professional bodies (see appendix).

The information for the QEC assessment is provided by both the practitioner (observer) and the worker who has direct experience of performing the task. Workers may have good suggestions for improvement and their participation will assist with the introduction of change. This initial co-operation should be encouraged and should be continued during the design and implementation of any changes that are made to the task, equipment and workplace.

Interventions that focus solely on the worker (e.g. training, selection) have been found of limited value in reducing or preventing WMSDs. The ergonomics redesign approach is therefore preferable.

Re-assessment of exposure

Re-assessment should be undertaken following:

- changes in work processes,
- changes in output levels e.g. due to seasonal demands,
- any workplace intervention.

Exposure assessment is an on-going process. Assessments records should be maintained to allow comparisons over time for various work tasks. Additionally exposure records for individual workers can be compiled.

Over the long-term, exposure data for different jobs should be generated and compared to other health indictors recorded at work (e.g. reported complaints or sickness absence).

The data from the exposure assessment/re-assessments can inform discussions with management on the priorities for change and the comparative effectiveness of different solutions to reduce WMSDs.

Appendix

Development of QEC

The Quick Exposure Check [QEC] was designed at the Robens Centre for Health Ergonomics to meet practitioners requirements for a practical method of assessing exposure to WMSD risk factors in the workplace.

It was developed using a participatory ergonomics approach, with 200 practitioners involved throughout the process. It was developed, tested, modified and validated based upon both simulated and real work tasks. The tasks covered a wide range of work activities, such as manual handling, repetitive tasks, static or dynamic tasks, seated or standing tasks, and tasks with low or high visual demands.

Studies have shown that QEC has good sensitivity and usability, 'acceptable' or 'moderate levels of agreement' for its inter-observer reliability, and a good intra-observer reliability. Field studies have indicated that it is reliable in a practical context and suitable for a wide range of jobs.

Cost benefits

An approach to determine cost benefits of health and safety interventions has been developed by European Safety and Health. Details of these can be found at: http://europe.osha.eu.int/good_practice/risks/msd/.

Legal requirements to prevent musculoskeletal disorders
The European Directives that provide protection for workers against developing Musculoskeletal Disorders are:

- Directive 89/391 - a general framework for risk identification and prevention.
- Directive 90/269 - identification and prevention of manual handling risks.
- Directive 90/270 - identification and prevention of risks from work with display screen equipment, including minimum requirements for equipment, work environment and computer interface.
- Directive 89/654 - minimum standards for workplaces, including seating, lighting, temperature and work station layout.
- Directive 89/655 - suitability of work equipment.
- Directive 89/656 - suitability of personal protective equipment.
- Directive 98/37 - machinery (replaced Directive 89/392).
- Directive 93/104 - organisation of working time.

Details of these can be found at:
http://europe.osha.eu.int/legislation/directives/

These are supplemented by further Regulations and Guidance within specific member states, e.g. Manual Handling Operations (L23) and Upper Limb Disorders in the workplace (HSG60) in the UK.

Professional societies and organisations

- The Ergonomics Society http://www.ergonomics.org.uk

- Institution of Occupational Safety and Health http://www.iosh.co.uk

- Health and Safety Executive http://www.hse.gov.uk

- Robens Centre for Health Ergonomics http://www.eihms.surrey.ac.uk/robens/erg/

Journals, books and reports

Upper limb disorders

- Li G. and Buckle P. 1999, **Evaluating Change in Exposure to Risk for Musculoskeletal Disorders - a Practical Tool.** Suffolk, HSE Books CRR251 http://www.hse.gov.uk/research/crr_pdf/1999/crr99251.pdf

- Moray N. 2000, **Culture, politics and ergonomics,** Ergonomics, 43, 7, 858-868.

- National Institute of Occupational Safety and Health. 1997, **Musculoskeletal Disorders and Workplace Factors: a Critical Review of Epidemiological Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity and Low Back.** Ed. BP Bernard. Cincinnatti, OH: NIOSH.

- **Upper Limb Disorders in the Workplace.** HSG60. HSE Books, 2002. ISBN 0717619788

- **Europe Under Strain: A Report on Trade Union Initiatives to Combat Workplace Musculoskeletal Disorders.** Brussels: TUTB, 1999. ISBN 2-930003-29-4 http://www.etuc.org/tutb/uk/

Vibration

- **In the Driving Seat.** IND(G)242L. HSE Books, 1997. ISBN 0717613143. http://www.hse.gov.uk/pubns/indg242.pdf

- **Health Risks from Hand-Arm Vibration - Advice for Employers.** G175(rev1). HSE Books, 1998. http://www.hse.gov.uk/pubns/indg175.pdf

- **Power tools: How to Reduce Vibration Health Risks.** INDG338. HSE Books, 2001.

- **Mechanical Vibration: Measurement and Evaluation of Human Exposure to Hand-Transmitted Vibration, Part 1: General Requirements.** ISO 5349-1:2001. http://www.iso.org

- **Mechanical Vibration and Shock: Evaluation of Human Exposure to Whole-Body Vibration, Part 1: General Requirements.** ISO 2631-1:1997. http://www.iso.org

Stress

- **Organisational Interventions for Work Stress - A Risk Management Approach.** CRR 286/2000. HSE, 2000. ISBN 0717618382. http://www.hse.gov.uk/research/crr_pdf/2000/crr00286a.pdf

- **Work-Related Stress: A Short Guide.** INDG281rev1. HSE, 2001. ISBN 071762112X. http://www.hse.gov.uk/pubns/indg281.pdf

- **Tackling Work-Related Stress: A Managers' Guide to Improving and Maintaining Employee Health and Well-being.** HSG 218. HSE Books, 2001. ISBN 0717620506.

Quick Exposure Check (QEC)

QEC has been designed to:

- assess the changes in exposure to musculoskeletal risk factors of the back, shoulders and arms, hands and wrists, and neck before and after an ergonomic intervention
- involve the practitioner (i.e. the observer) who conducts the assessment, and the worker who has direct experience of the task
- indicate change in exposure scores following an intervention

The QEC Guide gives more detailed information about each question and the background to QEC.

Worker's name: _____

Worker's job title: _____

Task: _____

Assessment conducted by: _____

Date: _____ Time: _____

Action(s) required: _____

Worker's name _____ Date _____

Observer's Assessment

Back

A When performing the task, is the back
(select worse case situation)

A1 Almost neutral?
A2 Moderately flexed or twisted or side bent?
A3 Excessively flexed or twisted or side bent?

B Select ONLY ONE of the two following task options:

EITHER

For seated or standing stationary tasks. Does the back remain in a static position most of the time?

B1 No
B2 Yes

OR

For lifting, pushing/pulling and carrying tasks (i.e. moving a load). Is the movement of the back

B3 Infrequent (around 3 times per minute or less)?
B4 Frequent (around 8 times per minute)?
B5 Very frequent (around 12 times per minute or more)?

Shoulder/Arm

C When the task is performed, are the hands
(select worse case situation)

C1 At or below waist height?
C2 At about chest height?
C3 At or above shoulder height?

D Is the shoulder/arm movement

D1 Infrequent (some intermittent movement)?
D2 Frequent (regular movement with some pauses)?
D3 Very frequent (almost continuous movement)?

Wrist/Hand

E Is the task performed with
(select worse case situation)

E1 An almost straight wrist?
E2 A deviated or bent wrist?

F Are similar motion patterns repeated

F1 10 times per minute or less?
F2 11 to 20 times per minute?
F3 More than 20 times per minute?

Neck

G When performing the task, is the head/neck bent or twisted?

G1 No
G2 Yes, occasionally
G3 Yes, continuously

Worker's Assessment

Workers

H Is the maximum weight handled MANUALLY BY YOU in this task?

H1 Light (5 kg or less)
H2 Moderate (6 to 10 kg)
H3 Heavy (11 to 20kg)
H4 Very heavy (more than 20 kg)

J On average, how much time do you spend per day on this task?

J1 Less than 2 hours
J2 2 to 4 hours
J3 More than 4 hours

K When performing this task, is the maximum force level exerted by one hand?

K1 Low (e.g. less than 1 kg)
K2 Medium (e.g. 1 to 4 kg)
K3 High (e.g. more than 4 kg)

L Is the visual demand of this task

L1 Low (almost no need to view fine details)?
*L2 High (need to view some fine details)?

* *If High, please give details in the box below*

M At work do you drive a vehicle for

M1 Less than one hour per day or Never?
M2 Between 1 and 4 hours per day?
M3 More than 4 hours per day?

N At work do you use vibrating tools for

N1 Less than one hour per day or Never?
N2 Between 1 and 4 hours per day?
N3 More than 4 hours per day?

P Do you have difficulty keeping up with this work?

P1 Never
P2 Sometimes
*P3 Often

* *If Often, please give details in the box below*

Q In general, how do you find this job

Q1 Not at all stressful?
Q2 Mildly stressful?
*Q3 Moderately stressful?
*Q4 Very stressful?

* *If Moderately or Very, please give details in the box below*

* *Additional details for L, P and Q if appropriate*

*** L**

*** P**

*** Q**

Exposure Scores Worker's name _____ Date _____

Back

Back Posture (A) **& Weight** (H)

	A1	A2	A3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Back Posture (A) **& Duration** (J)

	A1	A2	A3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) **& Weight** (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Now do **ONLY** 4 if static
OR 5 and 6 if manual handling

Static Posture (B) **& Duration** (J)

	B1	B2
J1	2	4
J2	4	6
J3	6	8

Score 4

Frequency (B) **& Weight** (H)

	B3	B4	B5
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 5

Frequency (B) **& Duration** (J)

	B3	B4	B5
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 6

Total score for Back
Sum of scores 1 to 4 **OR**
Scores 1 to 3 plus 5 and 6

Shoulder/Arm

Height (C) **& Weight** (H)

	C1	C2	C3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Height (C) **& Duration** (J)

	C1	C2	C3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) **& Weight** (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Frequency (D) **& Weight** (H)

	D1	D2	D3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 4

Frequency (D) **& Duration** (J)

	D1	D2	D3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 5

Total score for Shoulder/Arm
Sum of Scores 1 to 5

Wrist/Hand

Repeated Motion (F) **& Force** (K)

	F1	F2	F3
K1	2	4	6
K2	4	6	8
K3	6	8	10

Score 1

Repeated Motion (F) **& Duration** (J)

	F1	F2	F3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) **& Force** (K)

	J1	J2	J3
K1	2	4	6
K2	4	6	8
K3	6	8	10

Score 3

Wrist Posture (E) **& Force** (K)

	E1	E2
K1	2	4
K2	4	6
K3	6	8

Score 4

Wrist Posture (E) **& Duration** (J)

	E1	E2
J1	2	4
J2	4	6
J3	6	8

Score 5

Total score for Wrist/Hand
Sum of Scores 1 to 5

Neck

Neck Posture (G) **& Duration** (J)

	G1	G2	G3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 1

Visual Demand (L) **& Duration** (J)

	L1	L2
J1	2	4
J2	4	6
J3	6	8

Score 2

Total score for Neck
Sum of Scores 1 to 2 _____

Driving

M1	M2	M3
1	4	9

Total for Driving _____

Vibration

N1	N2	N3
1	4	9

Total for Vibration _____

Work pace

P1	P2	P3
1	4	9

Total for Work pace _____

Stress

Q1	Q2	Q3	Q4
1	4	9	16

Total for Stress _____

NOTES