

Prevention strategy for musculoskeletal disorders of the upper limbs

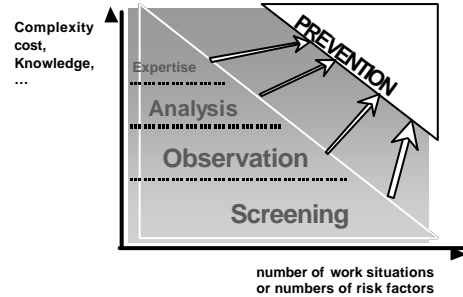


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Prevention strategy



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Methods of analysis of the risk of MSDs

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Classification of 30 methods according to 4 levels of the strategy

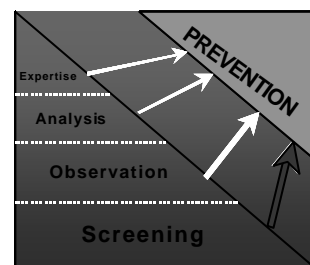
Screening	Observation	Analysis	Expertise
BORG	HSE	NIOSH WMSD	Armstrong
FIOH	QEC	OCRA	Wells
HSE (part 1)	Keyserling	PEO	Radwin
Lifshitz	Silverstein	TRAC	Ravainosoa
Kilbom	RULA	HARBO	
OSHA Australia	Strain index	HAMA	
Kemmlert		ARBAN	
		Rodgers	
		ERGO	
		OWAS	
		OREGE	
		Video Keyserling	

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SOBANE - TMS

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Level 1, Screening: Characteristics

Objective:

- to detect if there is a "problem" or not
- to bring immediate solutions

Based on:

- discussions between operators and the management
- experiences of the operators

Criteria of the method:

- simple, rapid (10 minutes), inexpensive
- no measurements
- understandable by all (simple terms)
- usable by the operators and the management
- systematically.

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Do you suffer or are likely you to suffer from MusculoSkeletal Disorders?

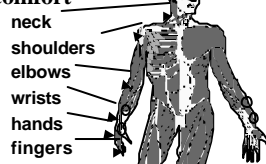


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What is it?

Pains
Stiffnesses
Discomfort



Fatigue,
irritation...

articulations
muscles
tendons
nerves

How many people in industry?
 ☉ 30 % at the neck
 ☉ 15 % at the shoulders
 ☉ 10 % at the elbows
 ☉ 15 % at the wrists

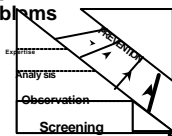
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Who can do what?

- The "specialists" can propose particular solutions
- The OH practitioners can analyze your working conditions in details and help you to work with less problems
- But it is YOU and your managers who know best YOUR working conditions day after day
- And it is YOU and your managers who can best detect and eliminate the problems

That is the purpose of this folder



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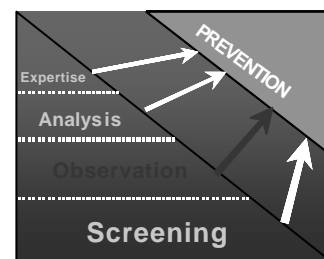
Ask yourself the following questions:

- Did anyone in your working group get any problem or complaint of the neck, shoulders, elbows or wrists linked to the working conditions?
- Is there any:
 - uncomfortable postures: torsion, armraised, wrists in flexion ...?
 - heavy and repeated efforts of the arms or hands: tightenings, pushing, pulling pressures, blows...?
 - repetition of always the same actions and gestures?
 - inadequate machines and tools?
- Ask yourself:
 - when this occurs
 - for what technical reasons
 - what can be done immediately to avoid it
 - what needs further investigations

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Level 2, Observation



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Level 2, *Observation*: Characteristics

- ◆ Simple, not time consuming (2h), inexpensive
- ◆ without measurements
- ◆ Understandable by all: workers and management
- ◆ When level 1, Screening did not succeed

How?

- ◆ list of 20 headings with 49 items: selection
- ◆ sections : why and how
- ◆ meeting (*coordinator*) with operators, management, technicians, internal and - or external OH practitioners if available...

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Level 2, Observation Introduction

Short introduction concerning:

- ◆ What are the MSDs
- ◆ What are the symptoms
- ◆ What are the main biomechanical factors responsible
- ◆ What is the magnitude of the problems
- ◆ Why is it important
- ◆ What can be done

Detailed description of how to use the method

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20 Headings of Observation

- | | |
|---|---------------------------------------|
| 1: Sitted working station | 11: Efforts of the wrists, hands |
| 2: Clerical work with VDU | 12: Repetition |
| 3: Workstation upright | 13: Manual handling |
| 4: Workstation: other positions | 14: Characteristics of the load |
| 5: Workstation: obstructions | 15: Lifting of the load |
| 6: Provision of the tools, materials... | 16: Pulling and pushing with the arms |
| 7: Tools | 17: Environment |
| 8: Vibrating tools | 18: Lighting |
| 9: Positions: neck, shoulders | 19: Temporal organization |
| 10: Positions: elbows, wrists, hands | 20: Organization of work |

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Level 2, Observation: How to proceed?

Coordinator

- Manager or foreman who knows perfectly the operations
- OH practitioner if available

The coordinator

- gets familiar with the method
- select the relevant headings
- organize the meeting

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The participants

- Ideally 5 to 6 people (maximum 10)
 - motivated
 - ready to disregard former conflicts
 - ready to reconsider the whole of the situation concerning the risks of MSDs
- 2 or 3 key operators experienced and accepted by their colleagues and ready to represent them, knowing how the work is really carried out
- The manager, the foremen, technicians knowing "how the work is supposed to be carried out "
- The coordinator and other OH practitioners if available

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When?

- Avoid the critical periods : reorganization, seasonal increase in production...

Where?

- If possible, close to the work stations to be able to directly check a point or the possibility of a control measure

Duration?

- About 2 hours

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Level 2, Observation

Selection of the headings

WORKING STATION: DATE:

Headings of Observation	Aspects concerned	Applicable?
1: Sitted workstation	Height of the work surface	•
	Quality of the seat	
	Back support	
	Height adjustment of the seat	
	Feet support	
2: Clerical work with VDU	Duration of the sitting position	•
	Installation of the station	
	Height of the work surface	
3: Work station upright	Tilt of the body	•
	Duration of the upright posture	
	Support of the knees, hips, trunk, arm...	
4: Work station: other positions	Twisted position	•
	Prolonged fixed position	
	Prolonged position knelt, squatted...	

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Level 2, Observation

1 SITTED WORKSTATIONS

Commentaire sur la situation observée :

- l'horizon de travail?
- la qualité du siège?
- l'appui dorsal?
- le réglage en hauteur du siège?
- l'espace pieds?
- la durée de la position assise?

En conclusion, la situation observée est :

acceptable	à améliorer
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Que peut-on faire de CONCRET pour l'améliorer?

La situation ou les solutions envisagées doivent être à Analyser plus en détail

Recommandations	à analyser
<p>Recommandations:</p> <ul style="list-style-type: none"> Adaptation de la hauteur de la surface de travail en fonction de la tâche. Travail sans support de la tête, sans appui sur le dossier, sans courbure. Prise en compte de l'ergonomie de la tâche. Si la tâche nécessite la courbure, il faut qu'elle soit contrôlée et limitée. Prise en compte de l'ergonomie de la tâche. Si la tâche nécessite la courbure, il faut qu'elle soit contrôlée et limitée. 	<p>à analyser:</p> <ul style="list-style-type: none"> La situation ou les solutions envisagées doivent être à Analyser plus en détail. La situation ou les solutions envisagées doivent être à Analyser plus en détail. La situation ou les solutions envisagées doivent être à Analyser plus en détail. La situation ou les solutions envisagées doivent être à Analyser plus en détail.

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1: SITTED WORKSTATION

How is the situation concerning:

- the height of the scheme of work?
- the quality of the seat?
- the dorsal support?
- the height adjustment of the seat?
- the support feet?
- duration of the sitting position?

In conclusion, the current situation is acceptable to improve

What can one make the CONCRETE one to improve it?

The situation or the solutions considered must be analyzed more in detail no yes

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	Why be concerned with it?	Recommendations:
Height of the work surface	If badly adapted: <ul style="list-style-type: none"> bad positions arms outstretched curved back movements difficult 	<p>Adapt the height of the work surface as a function of the tasks:</p> <ul style="list-style-type: none"> Work with support of the forearms: a few cm above the elbows For freedom of the arms: 5 to 15 cm under the elbows <p>Work on computer or typewriting:</p> <ul style="list-style-type: none"> keyboard slightly below the elbows
Quality of the seat	If bad quality: <ul style="list-style-type: none"> bad positions thight compression or under the knees bad stability movements difficult 	<p>Select a seat with the following characteristics:</p> <ul style="list-style-type: none"> Adjustable height of the seat and the back Surface of the seat large enough to allow the movements Slightly tilted forward (2 with 5°) rotating and mobile on wheels stable Stuffing of approximately 2,5 cm
Back support	If no or bad support <ul style="list-style-type: none"> back not supported back problems 	<p>Back rest just above the hips and usable whatever the task and so that the spinal column remains right</p>

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Level 2, Observation

Synthesis of the Observation

Prevention measures considered

- who does what and when?

Who	What	When	
		Planning	Realization

Need for a more detailed Analysis (level 3):

- effectiveness of the prevention measures described above
- residual risk after the implementation of these measures
- Priority and objectives: on what and to get what?

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Level 3, Analysis

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Level 3, Analysis: Characteristics

- When *Observation* did not succeed
- Intervention of *an OH practitioner*
 - Specific training about MSDs not indispensable
- Simple measurements by means of common instruments
- Longer: in term of days

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Level 3, Analysis

Revision of the *Observation*

- of the measures proposed at the preceding level
- in bringing the competence of the OH practitioner
- to determine what requires an *Analysis*

Analysis of particular aspects

- Video recordings
- Comparison of different ways of performing the tasks
- Development of the technical solutions

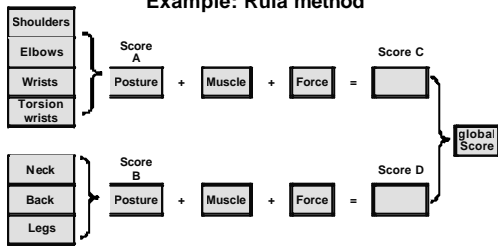
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If necessary: quantification

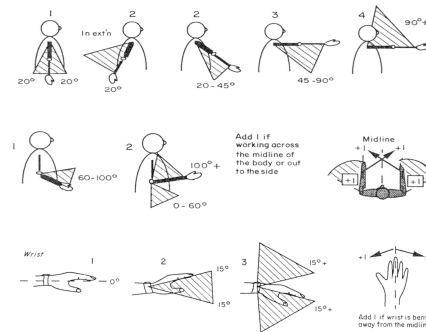
Example: Rula method



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Recommandations

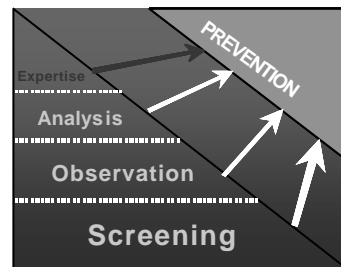
- Score 1 or 2: risk level 1.
 - Low risk, can be considered as acceptable if the effort is not continuous or repeated during a long period
- Score 3 or 4: risk level 2.
 - A more detailed study is needed and modifications could be required
- Score 5 or 6: risk level 3.
 - A more detailed study and modifications are required as soon as possible
- Score 7: risk level 4.
 - A more detailed study and modifications are required immediately

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Level 4, Expertise



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Level 4, *Expertise*: Characteristics

- Intervention of a specialist in cooperation with the coordinator and the OH practitioner
- Implication function of the results of the former levels
 - ◆ specific intervention, definite need
 - ◆ Measurements according to the context
 - to validate solutions considered
 - to seek sophisticated solutions

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