

# The SOBANE strategy for the prevention of occupational health risks

## Application in the field of Repetitive Strain Injury (RSI)



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## Summary

- The basic principles
- The strategy
- The methods

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1. Priority of prevention
2. Complementarity of the OH partners
3. Worker as the MAIN actor of prevention
4. Training vs assistance
5. Globality of the problemes
6. Preventive vs compliance approach
7. Management vs evaluation  
(quantification)
8. SME



## Principle 1: primacy of prevention

The european framework directive:

The employer insures the safety and health of all workers in all the aspects linked to their working situation

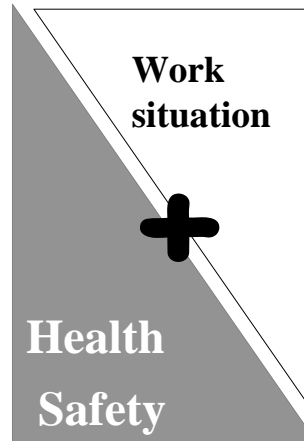
➔ **Accent**

- *Not on protection and medical supervision*
- **but on risk prevention**



## Principle 2: Complementarity of the partners

Workers  
Management  
Internal practitioners  
Occ physicians  
Occ Hygienists  
Ergonomists  
Experts



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## Principle 3: The main actor of prevention

Objective: maintain or improve the well being of the worker

➔ No pertinent action without the knowledge of the work situation that only the worker has

The worker is

- the main actor of prevention
- and not only the objet of prevention

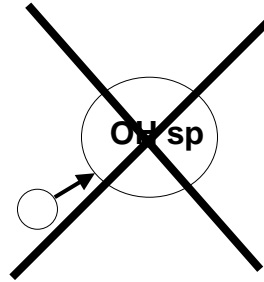
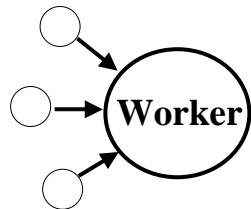
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➔ Participative approach

➔ Bottom up approach



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## Principle 4: Training vs assistance

Recognise explicitly

the ability and the integrity of

- the workers
- their management

Train them to take charge of themselves

- instead of assist them

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## Principle 5: The nature of the problems

- The worker 'lives' his work situation
  - not as a set of distinct and independant facts
  - but as a whole
- All the problems are interrelated
  - Noise influences the relations
  - The technical organisation influences the MSDs
  - The division of responsibilities influences the work content

*Everything is in everything*

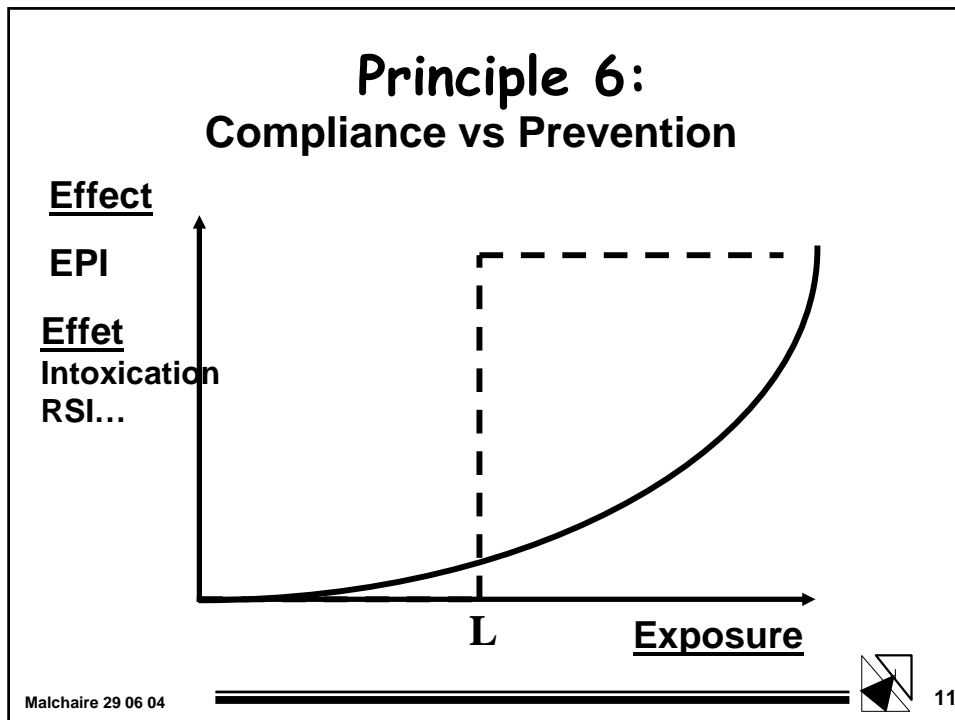


### → Comprehensive approach:

**Put every problem in its context**

**And not sequentially, as a function of external  
circumstances**





## Objectives

- Not only be under the legal values
- But search for the optimal stage of:
  - health and well being for the workers
  - technical and economical health for the company

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## Principle 7: Prevention vs assessment

### Untruths

- «What is not quantified does not exist»
- «Quantitative evaluation leads to solutions»
  - How much vs why and how
  - The time weighted average vs the details
- «It is necessary to measure in order to determine whether a risk exists or not»
  - Prevention vs compliance



### → ACT

No assessment a priori, but a posteriori  
expensive  
long and difficult  
not representative

Management instead of evaluation

*“It is not unusual to see more attention given to exposure assessment than to risk prevention. The fascination exerted by sophisticated equipment and by numbers is, for some reason, greater than the interest in designing pragmatic solutions to prevent exposure”*

*B. Goelzer (1996)*



## Quantification when necessary:

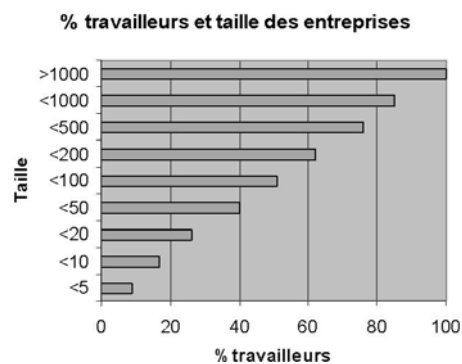
- Scientific Research
  - dose-effect-response relationships
- Compensations
- Go further on a particular aspect
- For the residual risk
  - Compare before - after

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## Principe 8: SME



➔ **Develop methods applicable in SME  
and not only in large ones**

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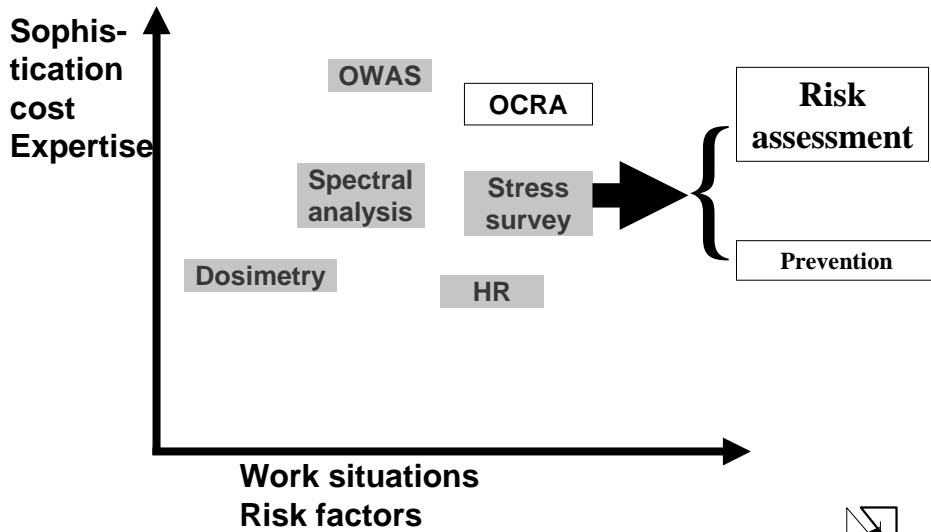
# The SOBANE strategy

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## Without a strategy



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## A strategy

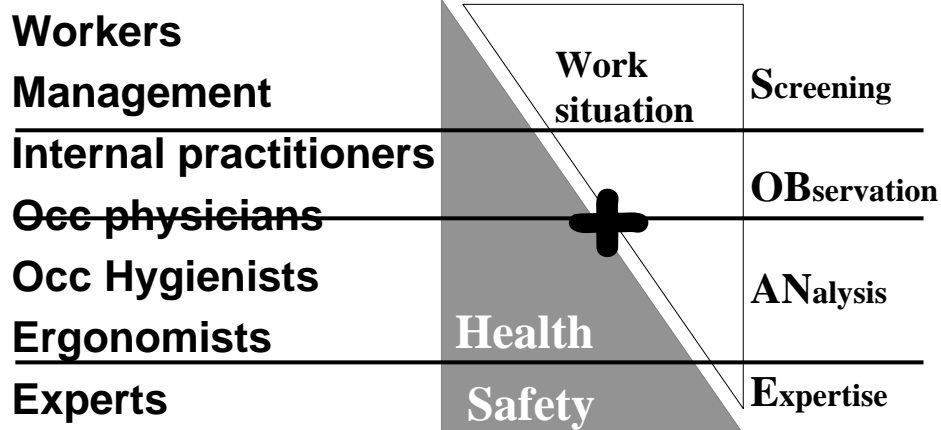
- actors
  - artillery
  - cavalry
  - infantry

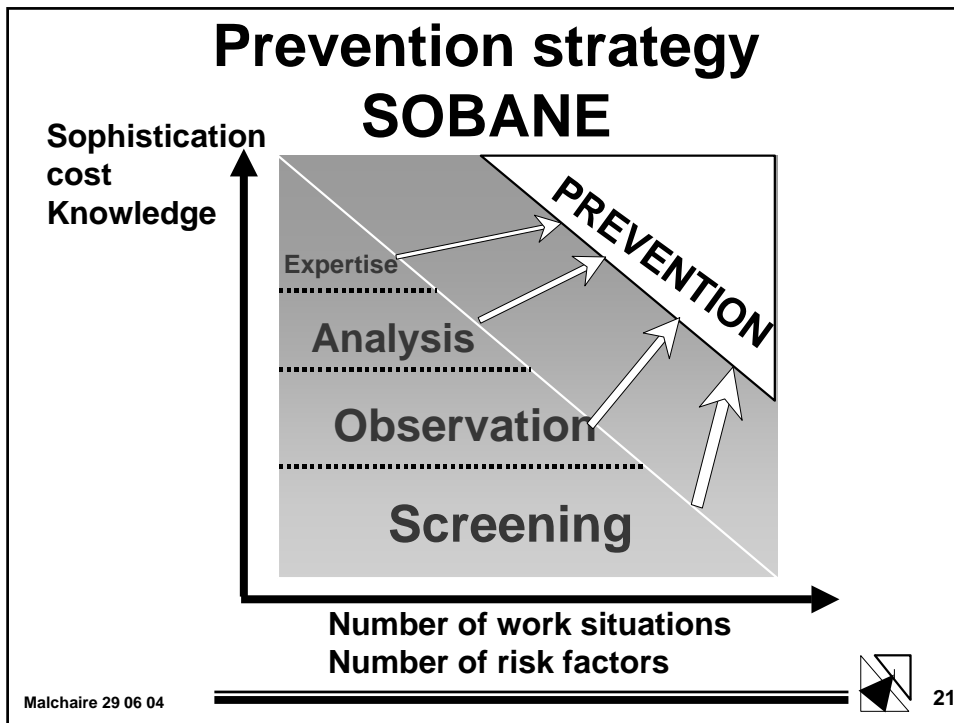
• in time

≠ method



## Health & safety partners





	Stage 1 <i>Screening</i>	Stage 2 <i>Observation</i>	Stage 3 <i>Analysis</i>	Stage 4 <i>Expertise</i>
• When?	Systematically	When a "problem" is detected	More complicated Cases	Very complex cases
• How?	Opinions	Qualitative observations	Ordinary measurements	Specialised measurements
• Cost?	Very low	Low	Average	High
• Duration	10 min	2 hours	1 day	A few days
• By whom?	Workers + company management	Workers + company management	Same + specialists	Same + specialists + experts
• Knowledge - working conditions - ergonomics	Very high Low	High Average	Average High	Low Specialised

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## **Level 1, Screening**

### **Objectives**

- Identify the major problems
- Remedy to obvious problems

### **How:**

- Simple and time effective method
- Simple vocabulary
- Performed internally by the workers and their management

**If problems remain: level 2: Observation**



## **Level 2, Observation**

### **Objectives:**

- go further into the unsolved "problems

### **How:**

- simple, quick and low cost method
- used systematically by the OH general practitioners
- with the workers and the management

**If problems remain: level 3: Analysis**



## Level 3, Analysis

### Objectives:

- when levels 1 and 2 did not solve the problems
- analyze further the situation in search for solutions

### How:

- method more difficult to understand and use
- longer and more costly
- used by the external OH practitioners with:
  - the needed education and training
  - the methodology and the techniques
- **WITH the internal OH practitioners AND the workers**



## Level 3, Analysis

**Evaluation of the residual risk**

**If still unacceptable: level 4, Expertise**



## Level 4, Expertise

**Objectives:**

- Eliminate the residual risks

**How:**

- Specialized measurements or techniques
- With the cooperation of experts who bring to the participants at levels 1, 2 and 3 their methodological and technical competences
- Occasional and detailed studies
- According to precise specifications set up at level 3, Analysis



	Screening	Observation	Analysis	Expertise
<b>S</b>	Spaces			
<b>C</b>	Machines			
<b>R</b>	Safety			
<b>E</b>	.....			
<b>E</b>	Pollution			
<b>N</b>	lighting			
<b>I</b>	Mental load			
<b>N</b>	Relations			
<b>G</b>	Responsabilitis			



## Characteristics

### Global:

- study of all factors contributing to the health and well being

### Participative

- Workers play the essential role in the dynamics of improvement
- Occupational health specialists and experts are helping

### 4 complementary stages

- Requiring complementary knowledge and competencies



## Prevention strategy for musculoskeletal disorders of the upper limbs

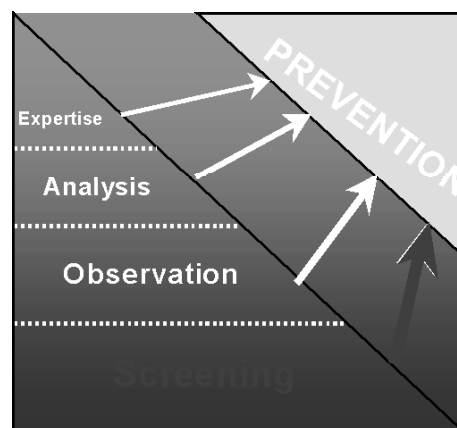


## Classification of 30 methods according to 4 levels of the strategy

<i>Screening</i>	<i>Observation</i>	<i>Analysis</i>	<i>Expertise</i>
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	



## SOBANE - TMS



## 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?

**Efforts**



**Postures**



**MSDs**



**Repetition**



**Vibrations**



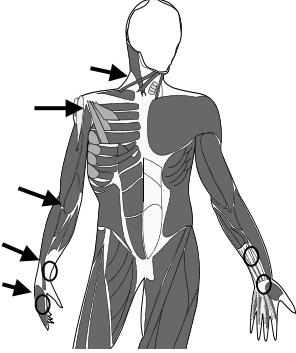
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## What is it?

**Pains**  
**Stiffnesses**  
**Discomfort**  
neck  
shoulders  
elbows  
wrists  
hands



**Fatigue,**  
**irritation...**

articulations  
muscles  
tendons  
nerves

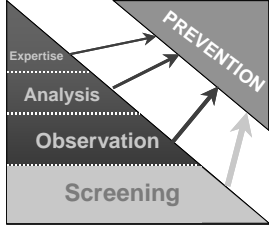
**How many people ☹ in industry?**

☹	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:

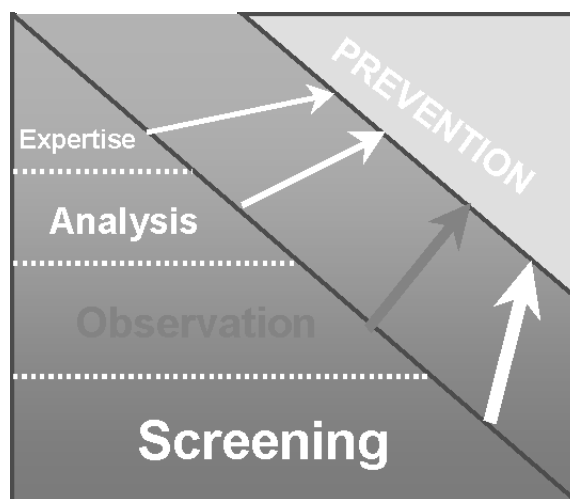
- Did anyone in your working group get any problem or complaint of the neck, shoulders, elbows or wrists linked to the working conditions?
- Is there any:
  - uncomfortable postures: torsion, arm raised, wrists in flexion ...?
  - heavy and repeated efforts of the arms or hands: tightenings, pushing, 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...



## **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**



## 20 Headings of Observation

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



## 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



## 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



## 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



## Level 2, Observation: Selection of the headings

WORKING STATION: DATE:		
Headings of Observation	Aspects concerned	Applicable?
1: Sitted workstation	Height of the work surface	<input type="checkbox"/>
	Quality of the seat	
	Back support	
	Height adjustment of the seat	
	Feet support	
	Duration of the sitting position	
2: Clerical work with VDU	Installation of the station	<input type="checkbox"/>
3: Workstation upright	Height of the work surface	<input type="checkbox"/>
	Tilt of the body	
	Duration of the upright posture	
	Support of the knees, hips, trunk, arm...	
4: Workstation: other positions	Twisted position	<input type="checkbox"/>
	Prolonged fixed position	
	Prolonged position knelt, squatted...	



### 1 SITTED WORKSTATIONS


*Comment est la situation concernant:*

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

<i>En conclusion, la situation actuelle est</i>	<input type="checkbox"/> acceptable	<input type="checkbox"/> à améliorer
<i>Que peut-on faire DE CONCRET pour l'améliorer?</i>		
<i>La situation ou les solutions envisagées sont-elles à Analyser plus en détail</i>	<input type="checkbox"/> acceptable	<input type="checkbox"/> à analyser

	Pourquoi s'en soucier?	Recommandations:
Hauteur du plan de travail	Si mal adapté: • Mauvaises positions • Bras tendus et dos courbé • Mouvements difficiles	Adapter la hauteur du plan de travail suivant le type de tâche: • Travail avec appui des avant-bras: quelques cm au-dessus des coudes • Poste industriel qui requiert la liberté des bras: 5 à 15 cm sous les coudes • Travail sur ordinateur ou dactylographie: clavier légèrement en dessous des coudes
Qualité du siège	Si mauvaise qualité: • Mauvaises positions • Compression des cuisses • Ou sous les genoux • Mauvaises rotelles • Mouvements difficiles	Choisir un siège avec les caractéristiques suivantes: • Hauteurs du siège et du dossier ajustables • Surface de l'assise large pour permettre les mouvements • Assise légèrement inclinée vers l'avant (2 à 3°) • Siège tournant et mobile sur roulettes • Piètement à 5 branches • Rembourrage de l'assise et du dossier d'environ 2,5 cm
Appui dorsal	Si pas ou mauvais appui, colonne vertébrale et problèmes de dos	Siège avec appui lombaire juste au-dessus des hanches et utilisable quelle que soit la tâche et de façon à ce que la colonne vertébrale reste droite
Réglage en hauteur du siège	Si trop haut ou trop bas: • Flexion des dos et nuque • Compression des cuisses • Mauvaise position des rotelles et des bras	Ajuster la hauteur du plan de travail pour avoir: • Les cuisses horizontales • Les jambes verticales • Les pieds à plat sur le sol ou sur un appui-pieds Former l'opérateur à ajuster la hauteur du siège et du dossier suivant sa taille
Appui-pieds	Pour les sujets petits, pour éviter	• Angle d'inclinaison: proche de 10°






## 1: SITTED WORKSTATION


How is the situation concerning:

- the height of the work surface
- the quality of the seat
- the dorsal support
- the height adjustment of the seat
- the feet support
- duration of the sitting posture

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

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## Level 2, Observation: Synthesis of the Observation

### Prevention measures considered

- *who* does *what* and *when*?

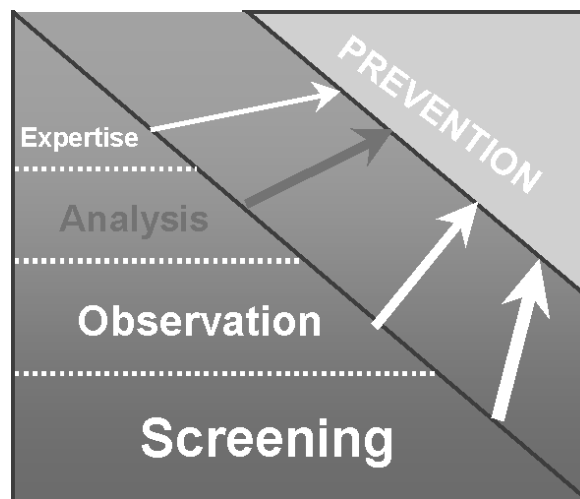
Who	What	When	
		Planning	Realization

### 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?



## Level 3, Analysis



## 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



## 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*

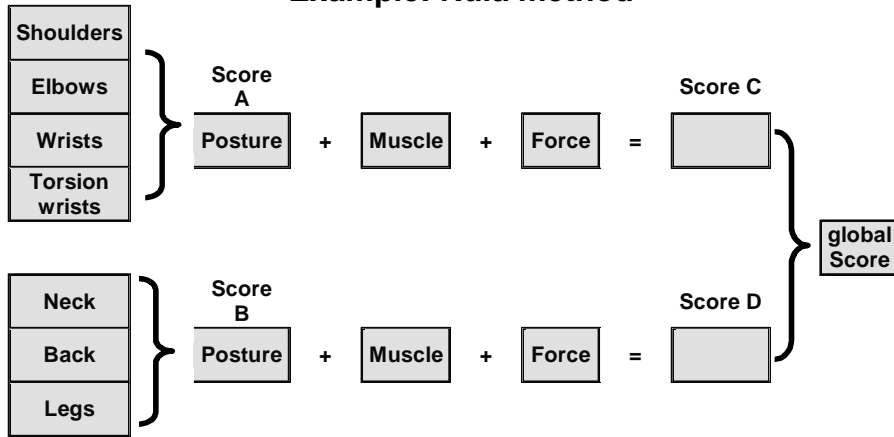
### *Analysis* of particular aspects

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



# If necessary: quantification

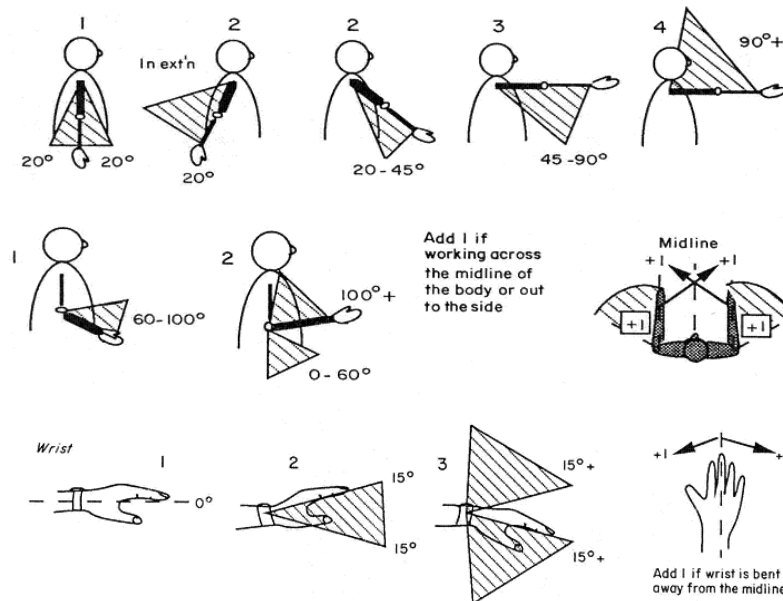
## Example: Rula method



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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.**

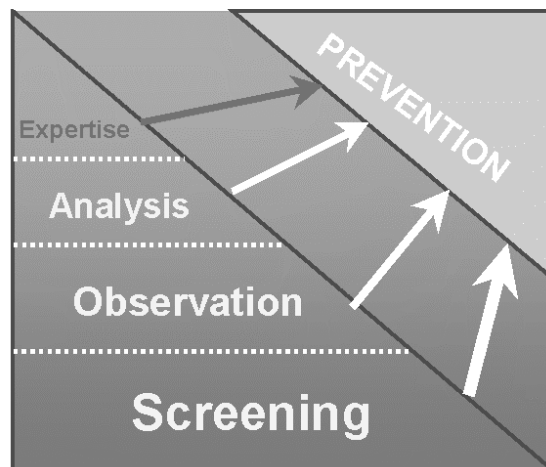
- A more detailed study and modifications are required as soon as possible

**Score 7: risk level 4.**

- A more detailed study and modifications are required immediately



## Level 4, *Expertise*



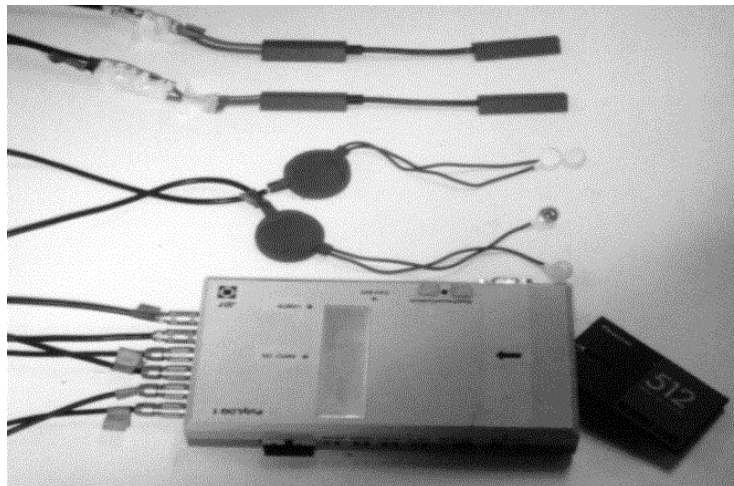
## Level 4, *Expertise*: Characteristics

- An expert
- 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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Thank you for your attention...

