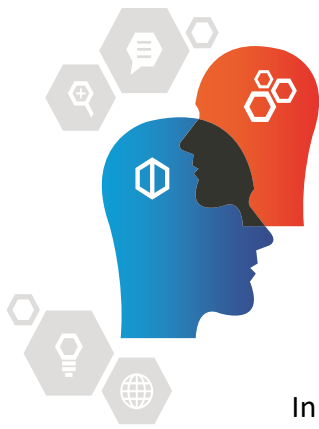




GUIDE TO USE THE REPORT EXPORTED FROM NAWO LIVE



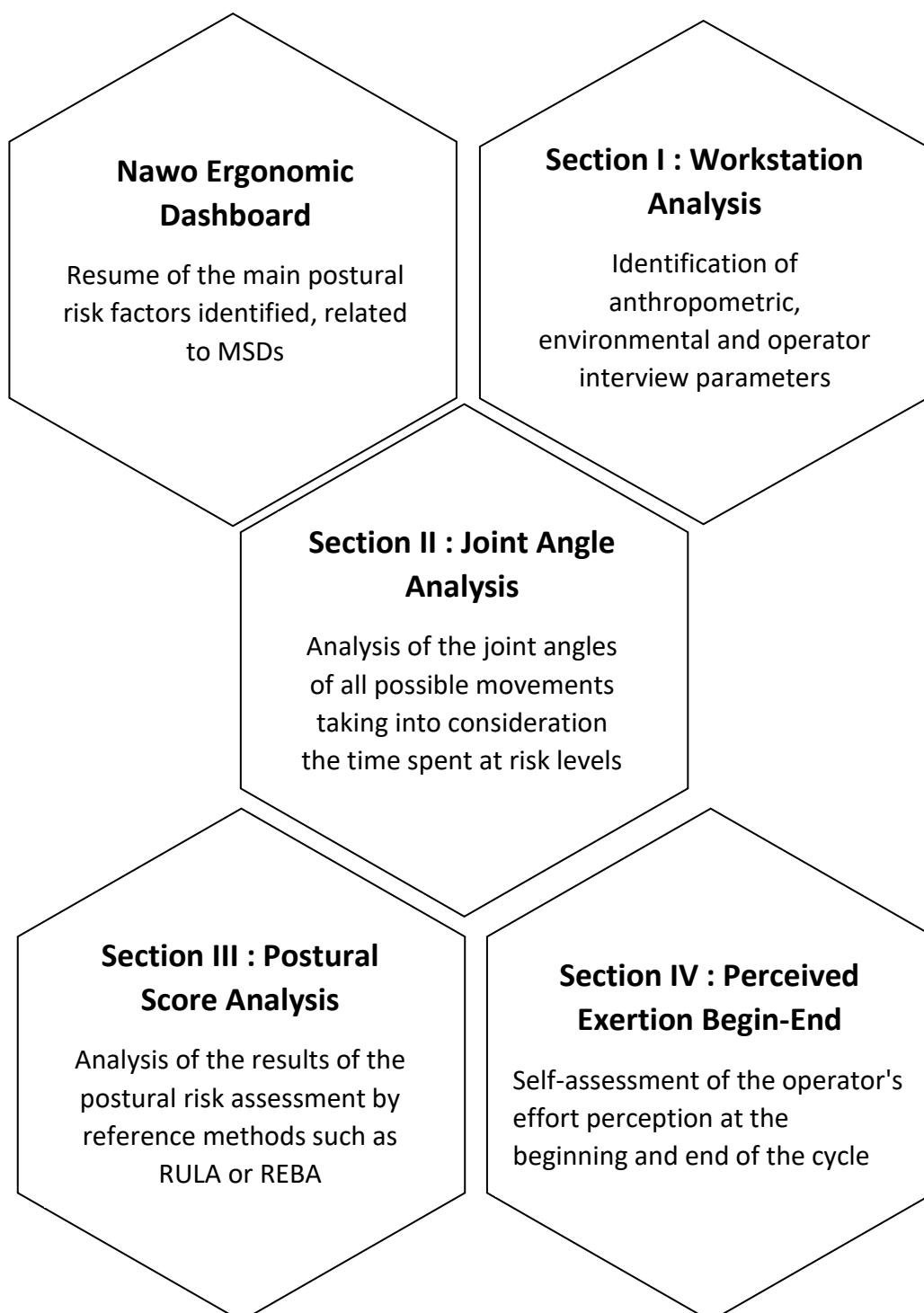


User Manual



In this document, a guide for using the report exported from your NawoLive software is presented.

The report contains a declarative part in which you have to enter data directly on the report and an automatic part which processes the postural data of the observed work cycle.

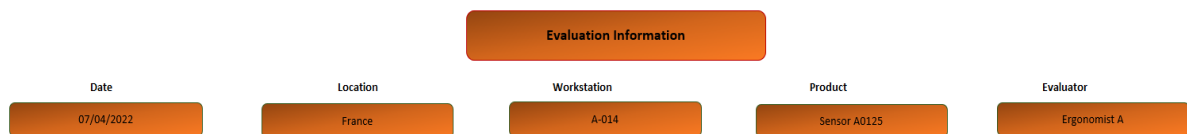


Part I : Evaluation information

In the first part of the dashboard, A resume of the main information reported allowing the traceability and the follow-up of the ergonomic evaluation of the data of **section I, II and III**.

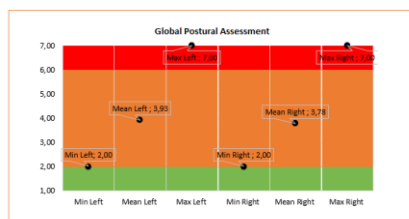
The main information obtained from section I concerning the workstation, the product, the date of the evaluation and the evaluator

1



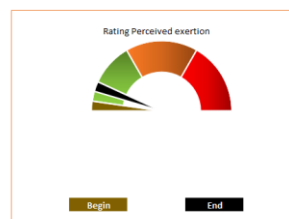
Part II : Global Ergonomics Analysis

4 The average of all joint angles observed during the work cycle for all body parts and for each body side



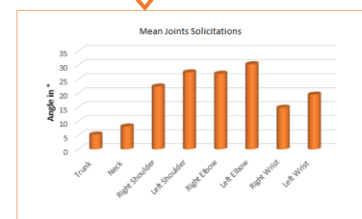
2

The mean value of the global postural score for the left and right sides



3

Rating exertion between the beginning and the end of the work cycle by the operator



Part III : Global Joints solicitations Analysis



The percentage of mean solicitation observed over the work cycle in regard to the critical values defined in the section « Joint Angle Analysis »

The percentage calculated for each movement represents the ratio between the average solicitation observed during the work cycle and the value of the solicitation considered critical.

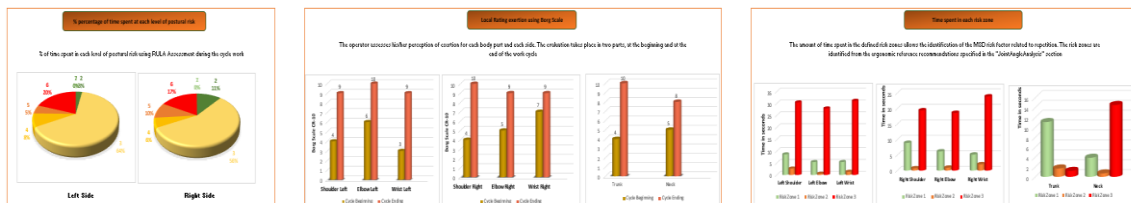
This % solicitation is calculated from the following equation

$$\% \text{ Solicitation} = \frac{\text{Solicitation}}{\text{Critical Solicitation}} * 100$$

Part IV : Detailed Ergonomics Analysis

Local rating exertion between the beginning and the ending of the cycle for each body part

Detailed ergonomics Analysis



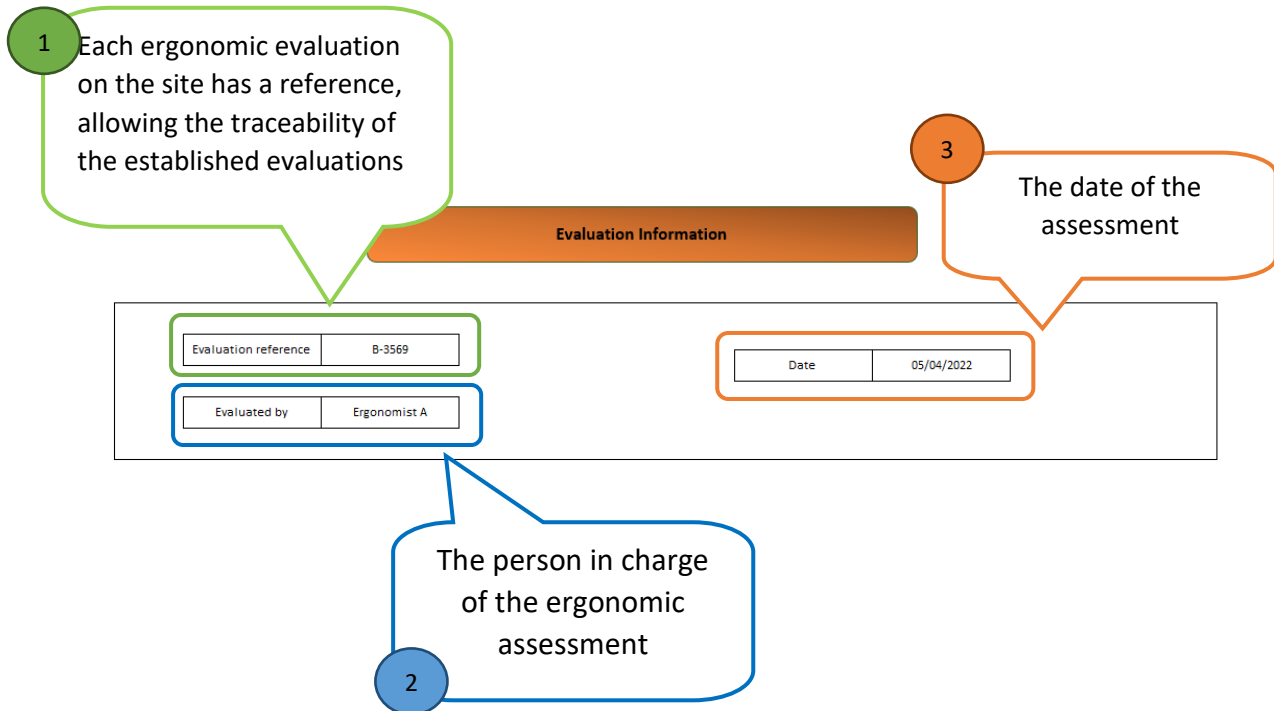
% of time spent at each level of the postural score

The time spent in seconds in each risk level defined in the « Joint Angle Analysis » part for all body parts

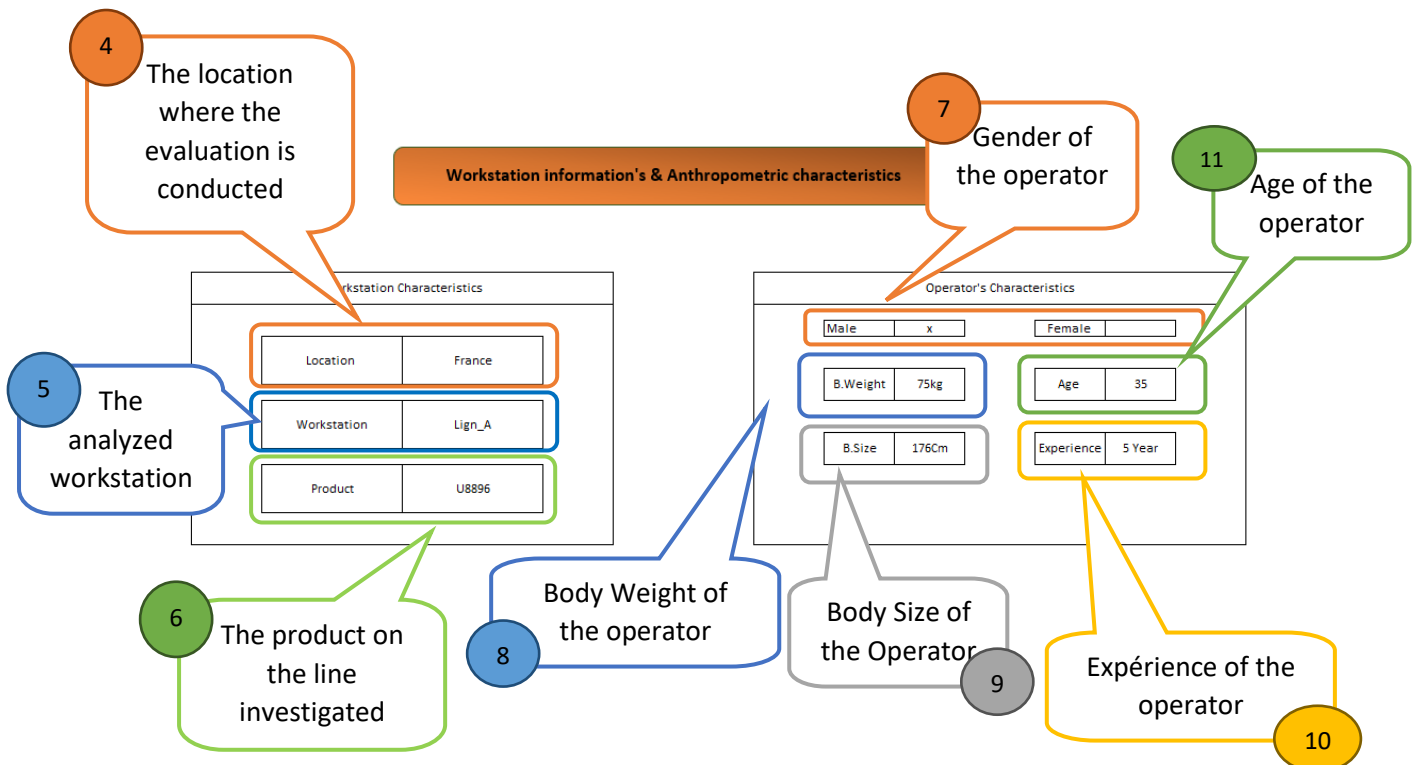
Section I : Workstation Analysis

In the first section, the evaluator completes the boxes with the data obtained from his operator, his workstation and the work environment.

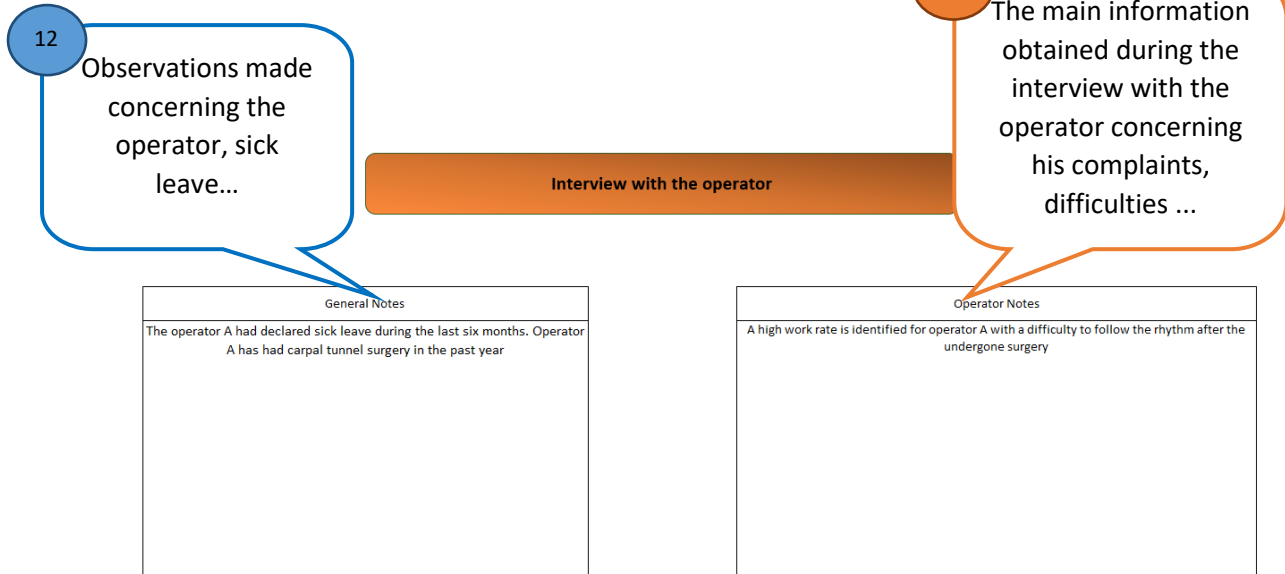
Part I : Evaluation Information



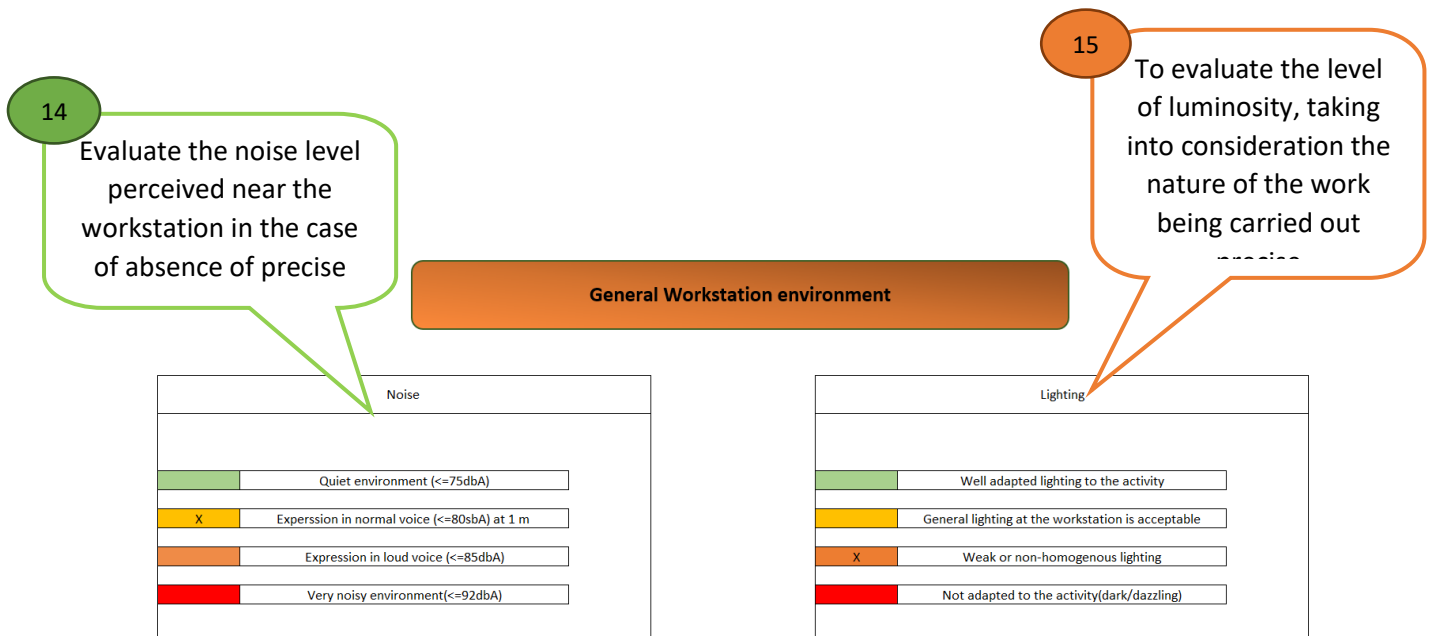
Part II : Workstation Information's & Anthropometric characteristics



Part III : Interview with the operator

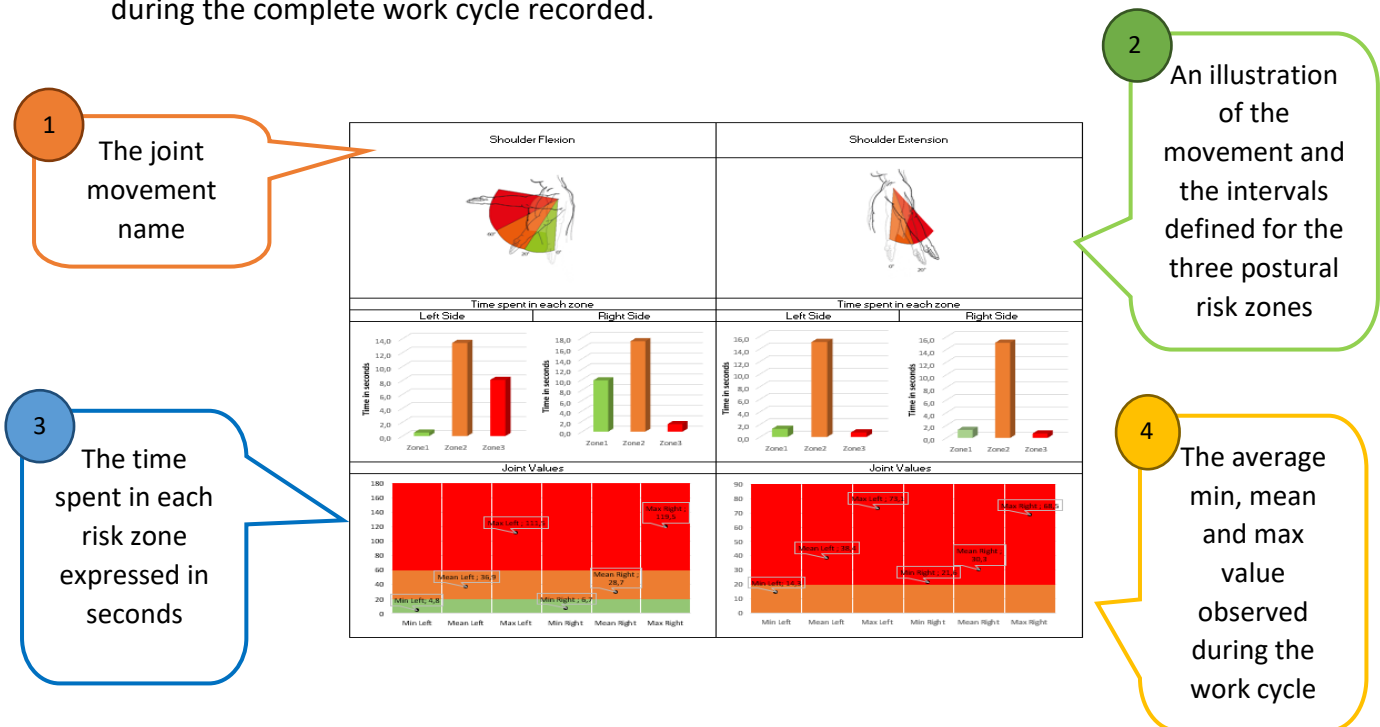


Part IV : General Workstation environment



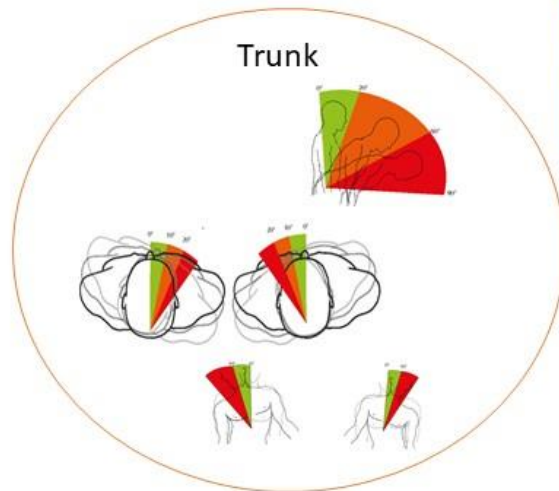
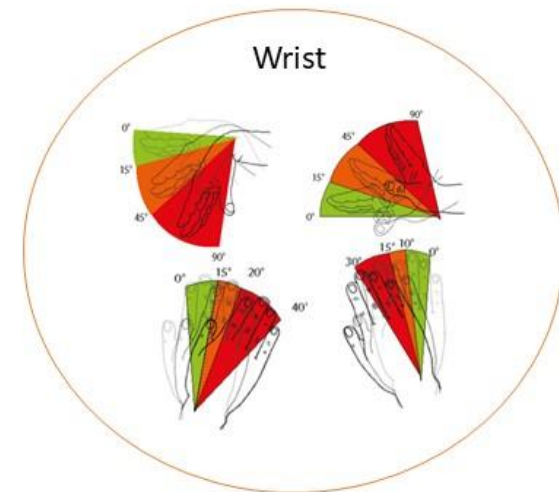
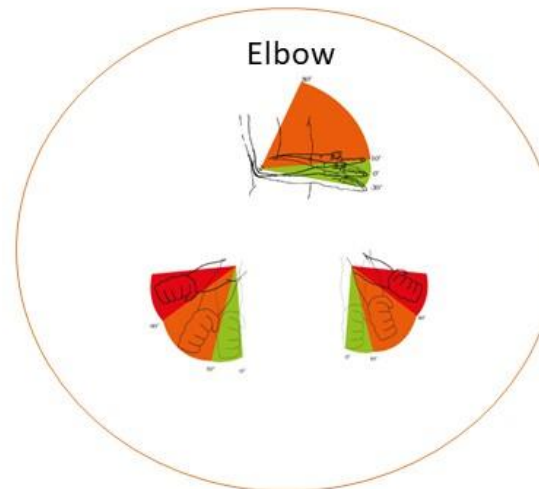
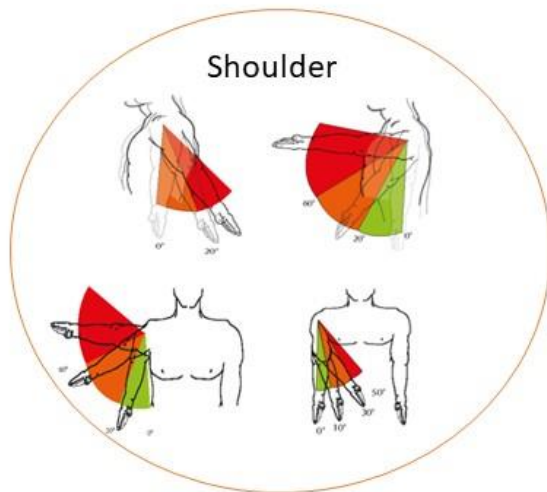
Section II : Joint Angle Analysis

A detailed analysis of the joint angles and the time spent in each risk zone are defined. The minimum, average and maximum joint amplitudes are determined for each movement during the complete work cycle recorded.

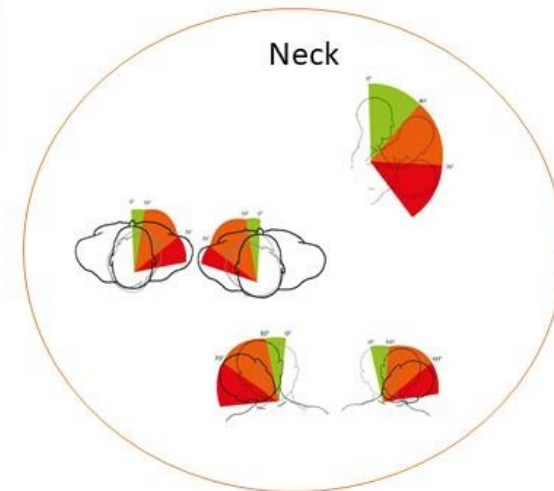


All thresholds are defined according to ergonomic rules , AFNOR and ISO standards.

Body Part Movement	Corresponding Norm
Shoulder Flexion	The AFNOR NF EN 1005-4. Part IV : Evaluation of postures and movements when working with machines
Shoulder Extension	
Shoulder Abduction	
Shoulder Adduction	
Elbow Flexion	The ISO 11228-3. Part III : Handling of low loads at high frequency
Elbow Pronation	
Elbow Supination	
Wrist Flexion	
Wrist Extension	The AFNOR NF EN 1005-5. Part V : Relative risk assessment repetitive handling at high frequency
Wrist Ulnar Deviation	
Wrist Radial Deviation	
Trunk Flexion	
Trunk Lateral Bending	The AFNOR NF EN 1005-4. Part IV : Evaluation of postures and movements when working with machines
Trunk Axial Rotation	
Neck Flexion	
Neck Axial Rotation	OREGE : Un outil simple d'évaluation des facteurs de risque biomécaniques de TMS du membre supérieur
Neck Lateral Bending	



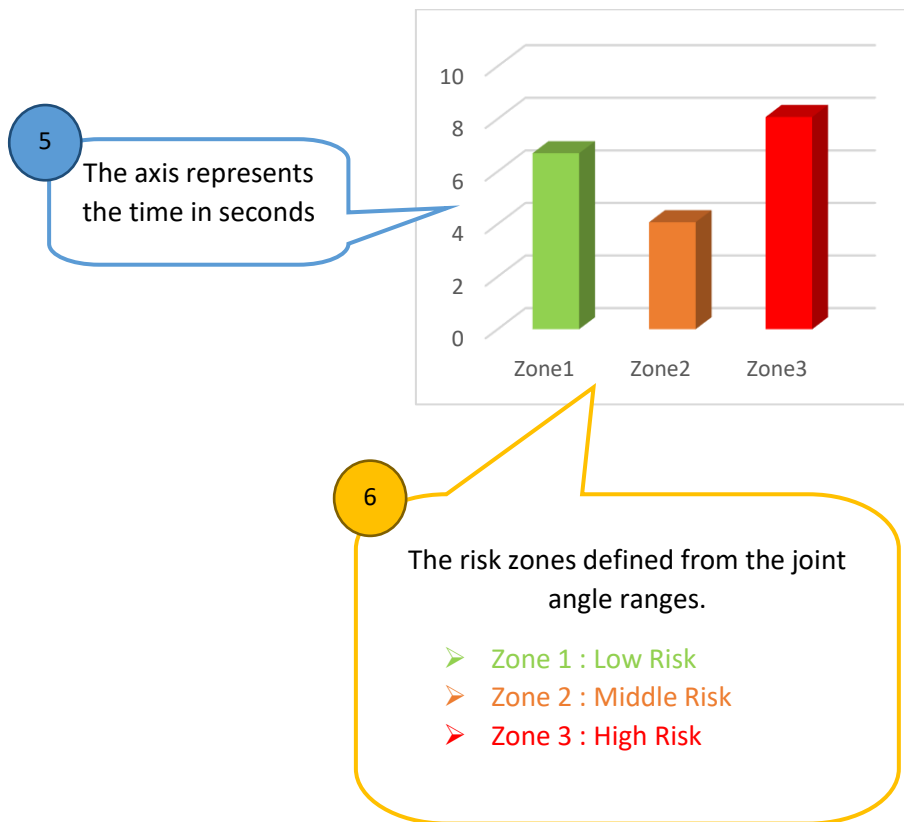
Full Body Movement Analysis



Presentation of the analyzed movements, the two sides left and right are analyzed in a separate way

For each movement, an evaluation of the mean time spent in each postural risk zone is represented allowing to assess the average time spent for an evaluated work cycle.

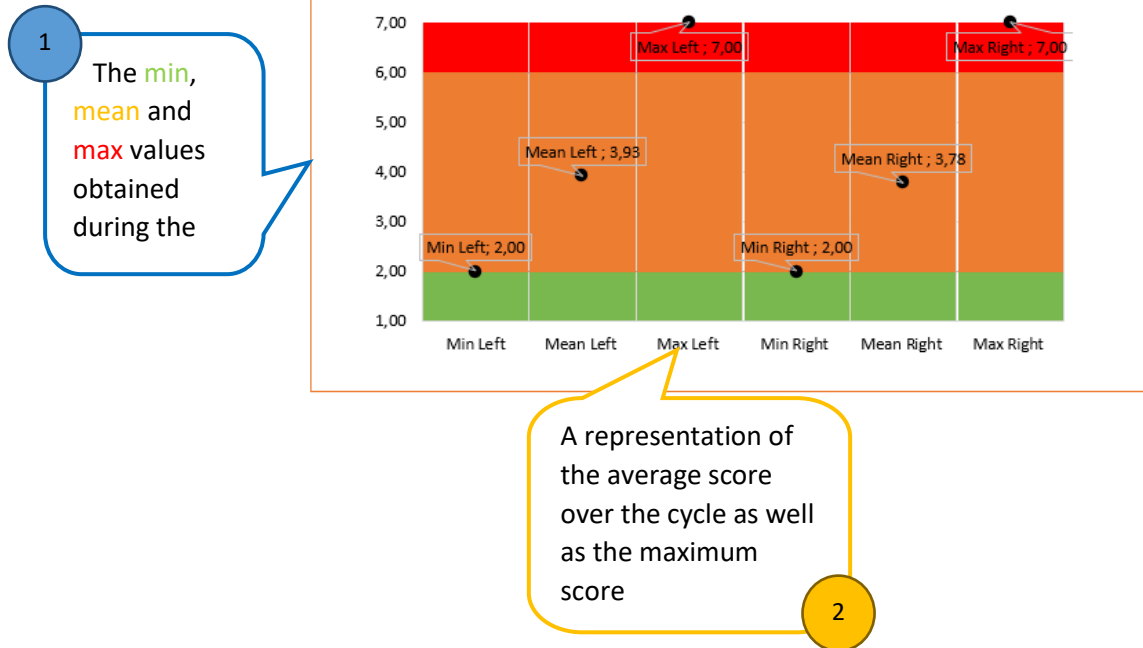
The time spent is expressed in **seconds**.



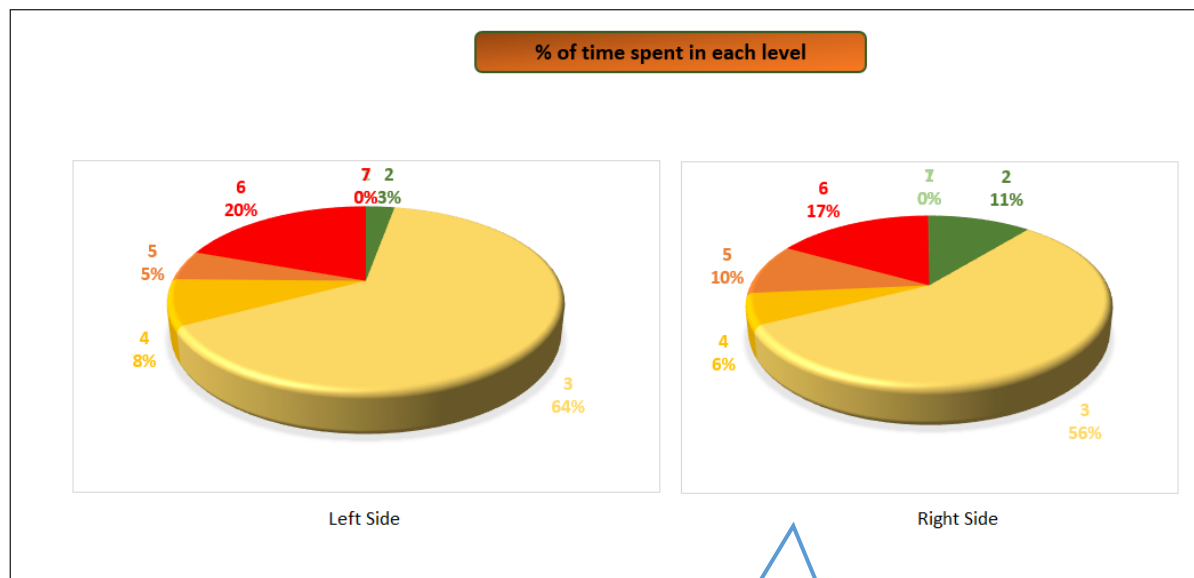
Section III : Postural Score Analysis

An analysis of the postural score obtained during the work cycle is carried out as well as the % of time spent at each risk level given by the ergonomic grid used, such as the RULA grid in this example.

Part I : Global RULA Score Analysis



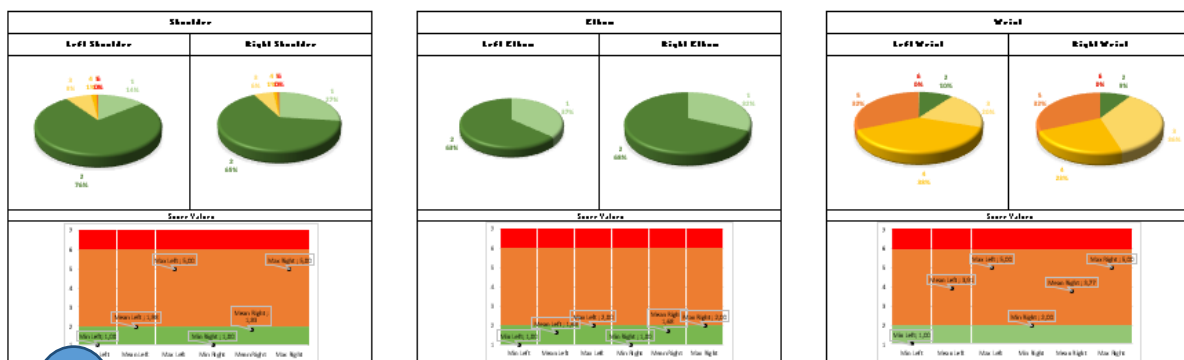
Part II : % of time spent in each level



Part III : Local RULA Analysis

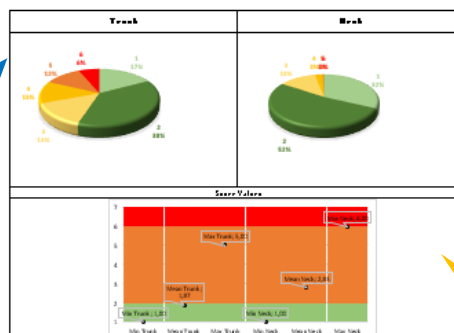
In the same section, a presentation of the results of the local analysis on the **shoulder**, **elbow**, **wrist** for right and left sides. In addition to the **trunk** and **neck**.

For each body segment, a representation of the % of time spent at each score level as well as the min, mean and max value is defined.



4

The **min**, **mean** and **max** values obtained during the cycle evaluated



5

A representation of the % of time spent in each score level during a RULA postural assessment

Section IV : Perceived Exertion Begin-End

The Borg Scale Category Ratio (CR-10) is a quantitative measure of perceived exertion during work. It's rated from 0 to 10.

CR-10 is attached to different words of appreciation: « No exertion at all », « Severe », « Maximal ».

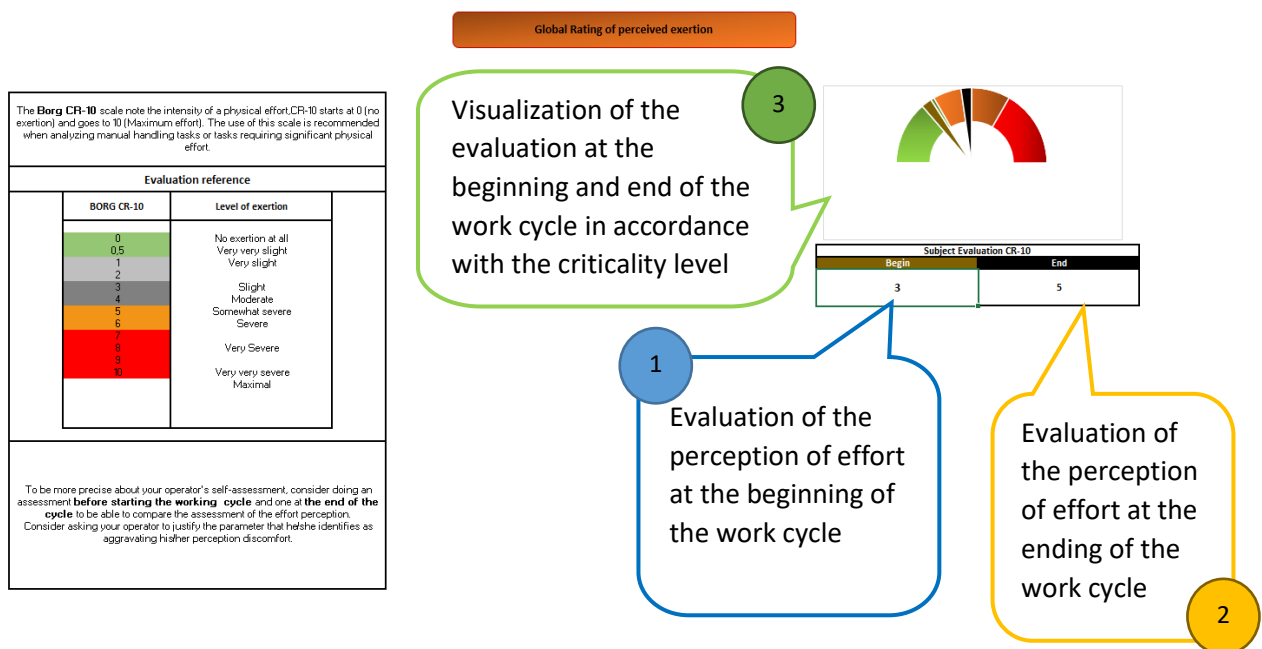
This global measure, based on the physical and psychological sensations of the person, takes into account the physical condition, the environmental conditions and the level of general fatigue.

At the beginning of the work cycle, the evaluator should ask the operator for his/her self-assessment of perceived exertion before starting the work cycle.

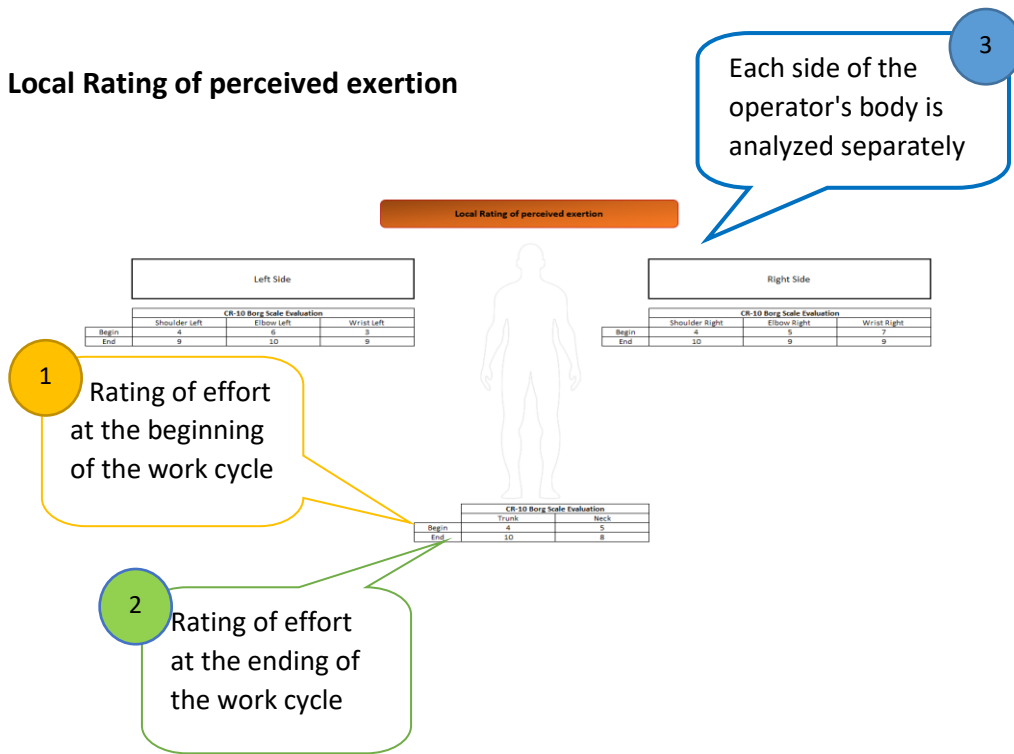
After the work is carried, the evaluator asks again for his perception of effort.

The assessment process in two steps allows the evaluator to compare the impact of the work cycle on the perception of effort.

Par I : Global Rating of perceived exertion






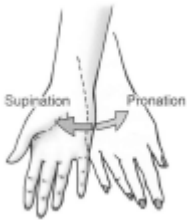

Part II : Local Rating of perceived exertion




Annex

For the adjustments to the RULA and REBA methods, we have applied corrections to make the calculations more reliable.

All of the adjustments relating to the method are summarized in the table below.

Movement	Threshold value	Reference
Shoulder abduction 	20 °	(Battini et al., 2014)
Opening angle of the bend Ajouter +1 	20°	(Battini et al., 2014)
Ulnar Radial Deviation Ajouter +1 	15°	ISO 11228-3
Pronation Supination 	10°	
Neck Rotation 	10°	(Aptel et al., 2000)

Neck Lateral Bending 	10°	(Aptel et al., 2000)
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