
A Checklist for Evaluating Exposure to Repetitive Movements of the Upper Limbs Based on the OCRA Index

E. Occhipinti and D. Colombini

Research Unit "Ergonomics of Posture and Movement" EPM — Milano,
Via Riva Villasanta, 11-20145 Milan, Italy

1 INTRODUCTION

The OCRA index method is presented elsewhere in this book. In that presentation, it was stated that the OCRA method was a concrete application of a *Consensus Document* produced by the Technical Group for Musculoskeletal Disorders of the *International Ergonomics Association* (IEA) (Colombini *et al.* 2001) and that the OCRA index can be, within definite limits, predictive of the risk of upper limbs (UL) Work-related MusculoSkeletal Disorders (WMSDs) in exposed populations (Occhipinti and Colombini 2004).

However, the OCRA index method is rather complex to apply and time consuming.

This paper is devoted to the presentation of a simpler tool (*Checklist*), based on the same general framework, criteria, and definition of the *Consensus Document* and of the OCRA index method. It is useful for quickly identifying the presence of the main risk factors to the upper limbs and for classifying the consequent exposure.

The OCRA *checklist*, based on the OCRA index method, is generally recommended for the initial screening of several workstations in a company featuring repetitive tasks, whilst the complete OCRA index is useful for the (re)design or in-depth analysis of workstations and tasks (Colombini *et al.* 2002).

The OCRA *checklist* method also considers and assesses four main collective risk factors based on their respective duration (Colombini *et al.* 2001):

1. Lack of proper recovery periods
2. Repetitiveness (frequency or actions)
3. Force
4. Awkward posture and movements

Other additional factors are also considered, such as mechanical, environmental, and organizational factors, for which there is evidence of a causal relationship with UL WMSDs.

All factors contributing to the overall exposure are considered in a general framework and the score characterizing the overall exposure is classified in different levels comparable with those given by the OCRA index.

2 PRESENTATION OF THE OCRA CHECKLIST

The OCRA *checklist*, at the first stage, describes a workplace (where a repetitive task is performed) and estimates the intrinsic risk, as if the workplace should be used for the whole of the shift by one worker (monotask job). This procedure makes it possible to find out which workplaces, in a given context (a company, factory, or department), are at risk because of their intrinsic characteristics, the risk being classified as "absent or acceptable," "borderline or very low," "light," "medium," or "high."

At the second stage, when a worker (or a group of workers) rotates on different workplaces (multitask job), the corresponding *checklist* scores can be weighed, considering relative time durations during the shift, in order to obtain an estimate of the level of exposure for the operators who perform different repetitive tasks.

The analysis system suggested with the *checklist* begins with the establishment of pre-assigned scores (higher with the higher risk), for each of the four main risk factors (recovery periods, frequency, force, posture), and for the additional factors.

The sum of the partial values obtained in this way produces a figure (a score) which then enables the estimation of the actual exposure level.

The OCRA *checklist* model is reported in Appendix 1 and is composed of four forms.

2.1 FORM 1 (GENERALITIES AND FACTOR "LACK OF RECOVERY PERIODS")

Form 1 of the *checklist* includes a short description of the workplace and of the type of task carried out. It is advisable

to find out how many workplaces are identical to the one described, and how many, although not identical, are very similar.

In large companies, it is always useful to carry out analyses based on similarities, as it is then possible to obtain more information in a shorter time.

Regarding risk factor concerns (“*lack of recovery periods*”) six different scenarios are presented in Form 1 whereby the interruptions of the tasks and/or breaks are distributed during the working shift: a score corresponds to each scenario. The scenario to choose is the one most similar to the one which is usually (and realistically) used by the workers at that workplace. Intermediate scores may be used with respect to the suggested ones, if they give a better picture of the real situation. The resulting number must be written in the correct box (**RECOVERY**).

2.2 FORM 2 (FACTORS “ACTION FREQUENCY” AND “FORCE”)

For the factor “*Action frequency*,” seven scenarios are offered, each characterized by a score from 0 to 10. Each item describes the frequency of arm technical actions in time (slow, quite fast, fast, very fast), relating it to the possibility, or impossibility, of having short breaks (constant, or inconstant). “Action frequencies per minute” are also indicated as reference points, to help in the choice of the most representative scenario for the task under examination at that moment.

It is advisable to estimate the action frequency of the limb that is most involved in the task by using a stopwatch, and by observing the operator over 2–3 min, counting the technical actions directly (for details regarding “technical actions” see the chapter on OCRA index). It is also possible to choose intermediate scores with respect to those indicated, if they better reflect the actual situation. The figure found must be written in the correct box for frequency (**FREQUENCY**).

The factor “*use of force*” is significant for the upper limb disorders considered here, and must be reported when occurring periodically (at least every few minutes).

The first group of questions concerns the presence of handling and lifting operations (by one limb) for objects weighing over 3 kg, or objects which have to be lifted with the hand in an awkward position (pinch), and that weigh over 1 kg; they also concern the need for using the weight of the body to obtain the necessary strength to carry out a given operation, or whenever a maximal use of force can be identified. The choice of the representative score is linked to the duration of activities where force has to be exerted, as indicated above: the greater the presence in the cycle, the higher the value of the numerical indicator. Intermediate values can also be chosen.

The second and third group of questions include the description of some of the most common working activities

which require the exertion of *intense force* (the second group, or block), and the exertion of a *moderate degree of force* (the third block), respectively. The activities which must be described for the two different levels of force are: to pull or push a lever, push buttons, close or open, press or handle components, use tools. It is also possible to add other items which may represent other actions where the use of force is required.

For activities requiring the use of “intense” force, the score may range from 4 to 16, according to how long the exertion lasts over the cycle; for moderate force exertions, the score may range from 2 to 8, but always according to duration. Here, too, it is possible to choose intermediate scores.

In doubtful cases, for instance when describing an activity that requires a moderate use of force, it is advisable to interview the operator directly.

The total score which is representative of the force exerted is obtained by adding the scores indicated in one or more of the three boxes (**FORCE**).

2.3 FORM 3 (FACTORS “AWKWARD POSTURES AND MOVEMENTS” AND “ADDITIONALS”)

Five blocks of questions are foreseen for the description of *awkward postures and movements*: the first four are marked with a letter (from A to D), the fifth one (letter E) with a pre-assigned score of 3.

The groups of questions marked with the letters A, B, C, D each describe a separate joint segment (shoulder, wrist, elbow, hand).

The last group (letter E) describes the presence of “stereotypy,” which means the presence of identical gestures (technical actions), always repeated for more than 50% of the cycle time. If the cycle time is shorter than 15 sec, “stereotypy” must still be considered as present (score 3).

The questions which are used to describe posture for each of the joint segments are very simple. For the arms, they describe how long the arms are kept or moved at about shoulder level; for the wrist, whether extreme postures or movements (extension, flexion, lateral deviation) are required and for which proportion of the task time; for the elbow, whether extreme movements (flexion-extension, prono-supination) or sudden movements are required and for which proportion of the task time; for the hand, if the type of grasp is a pinch grip, a palmar grip, or a hook grip (they all involve the use of the tip of fingers), and for which proportion of the task time. For each scenario (type of joint involvement and proportion of task time) a pre-assigned score is assigned. Out of the scores for each of the separate joint segments (A, B, C, D), only the highest must be taken, and it should be added to that of stereotypy, if present (E): the sum total will be the general score for posture (**POSTURE**).

Regarding *Additional factors* of physical-mechanical type (e.g. inadequate gloves, vibrations, compressions, repeated impacts, etc.), their presence for a relevant part (50% or more) of the task time must be described and scored.

The description must also include specifications as to whether the working pace is either partially or totally imposed by the machine. For each block, or group of questions, a single answer is allowed: the sum of the partial scores thereby obtained gives the additional factor score (**ADDITIONAL**).

2.4 FORM 4 (CALCULATING THE FINAL SCORE)

2.4.1 Calculating the checklist score for the workplace

To obtain the final score for the workplace, it is sufficient to add the partial scores obtained for each of the risk factors: lack of recovery, frequency, force, posture and movements, and additional.

2.4.2 Calculating the checklist score considering the operators exposure (one or more repetitive task)

In order to estimate the exposure level of the workers, the following procedures must be adopted:

- if the operators work exclusively at the workplace described in the analysis (monotask job), then the *checklist* score given to the workplace is the same as that given to the operators
- if the operators work in more than one workplace, implying repetitive tasks (multitask job), it is necessary to use the following formula to obtain the specific exposure score:

$$\text{Checklist score} = (\text{score A} \times \%PA) + (\text{score B} \times \%PB) + \dots + (\text{score Z} \times \%PZ)$$

where “score A,” “score B,” etc. are the *checklist* scores obtained for the various workplaces (tasks) on which the same operators work, and %PA, %PB, etc. represent the percentage time duration of the corresponding repetitive tasks with respect to the overall duration of all repetitive tasks considered during one shift.

2.4.3 Calculating the checklist score considering a reduced daily duration of repetitive task(s)

If the repetitive task(s) lasts less than 6 h within one shift (i.e. part-time work), it is possible to correct the *checklist scores* previously obtained considering actual duration. If the repetitive work (part-time) only lasts 2 h, the final score obtained with the *checklist* must be multiplied by 0.5; if it lasts 3–5 h, then the final result must be multiplied by 0.75.

3 CLASSIFICATION OF THE OCRA CHECKLIST SCORES

The numerical values indicated in the different sections of the *checklist* have been, at the design stage, “calibrated” to the multiplier factors supplied for calculation in the more exhaustive OCRA exposure index (Occhipinti *et al.* 2000).

On the other hand, in different studies, both methods (OCRA index and *checklist*) were applied at the same time and the relative results were thus compared, showing a very high association of results (Occhipinti *et al.* 2000; Occhipinti and Colombini 2004). Currently, the best association between OCRA index values and *Checklist* scores is given by the following equation:

$$\text{Checklist score} = 3.7 [\text{OCRA}] + 0.16 [\text{OCRA}]^2 + 0.0021 [\text{OCRA}]^3$$

This simple cubic regression equation has an adjusted $R^2 = 0.99$ and the strength of association is statistically very significant.

These results allowed the interpretation of the final *checklist* scores in correspondence to the OCRA index values which distinguish different exposure levels.

Checklist scores up to 7.5 correspond to OCRA values up to 2.2 (acceptable risk, green area); scores from 7.6 to 11.0 correspond to OCRA values between 2.2 and 3.5 (borderline or very low risk, yellow area); scores between 11.1 and 14.0 correspond to OCRA values between 3.6 and 4.5 (light risk, light red area); scores between 14.1 and 22.5 correspond to OCRA values between 4.6 and 9.0 (medium risk, red area); scores greater than 22.5 correspond to OCRA values greater than 9, and remain for the presence of very high risk (very red area).

REFERENCES

- COLOMBINI, D., OCCHIPINTI, E., DELLEMAN, N., FALLENTIN, N., KILBOM, A. and GRIECO, A., 2001, Exposure assessment of upper limb repetitive movements: a consensus document. In Karwowski, W. (ed.) *International Encyclopaedia of Ergonomics and Human Factors* (London, New York: Taylor & Francis), pp. 52–66.
- COLOMBINI, D., OCCHIPINTI, E. and GRIECO, A., 2002, *Risk Assessment and Management of Repetitive Movements and Exertions of Upper Limbs: Job Analysis, Ocra Risk Index, Prevention Strategies and Design Principles*. *Ergonomics Book Series* (Amsterdam: Elsevier Science).
- OCCHIPINTI, E. and COLOMBINI, D., 2004, Metodo OCRA: aggiornamento dei valori di riferimento e dei modelli di previsione dell'occorrenza di UL-WMSDs nelle popolazioni lavorative esposte a movimenti e sforzi ripetuti degli arti superiori. *La Medicina del Lavoro*, 95(4), 305–319.
- OCCHIPINTI, E., COLOMBINI, D., CAIROLI, S. and BARACCO, A., 2000, Proposta e validazione preliminare di una check-list per la stima dell'esposizione lavorativa a movimenti e sforzi ripetuti degli arti superiori. *La Medicina del Lavoro*, 91(5), 470–485.

APPENDIX 1

Annex1

OCRA CHECKLIST

A SHORTENED PROCEDURE FOR IDENTIFICATION AND ASSESSMENT OF MAIN RISK FACTORS FOR UPPER LIMB IN REPETITIVE TASKS

COMPILED BY..... Date.....

NAME AND SHORT DESCRIPTION OF WORKPLACE

.....
.....
.....
.....
.....
.....
.....

NO.OF WORKPLACE []

TYPE OF WORK INTERRUPTIONS (BREAKS OR OTHER VISUAL CONTROL TASKS) CHOOSE ONE ANSWER. IT IS POSSIBLE TO CHOOSE INTERMEDIATE VALUES.

- [0] - THERE IS AN INTERRUPTION OF AT LEAST 8 MINUTES EVERY HOUR IN THE REPETITIVE WORK (ALSO COUNT THE LUNCH BREAK);
[1] - THERE ARE 2 INTERRUPTIONS IN THE MORNING AND 2 IN THE AFTERNOON (PLUS THE LUNCH BREAK), LASTING AT LEAST 8-10 MINUTES ON THE 7-8 HOUR SHIFT, OR AT LEAST 4 INTERRUPTIONS PER SHIFT (PLUS THE LUNCH BREAK), OR FOUR 8-10 MINUTE INTERRUPTIONS IN THE 6-HOUR SHIFT.
[3] - THERE ARE 2 BREAKS, LASTING AT LEAST 8-10 MINUTES EACH IN THE 6-HOUR SHIFT (WITHOUT LUNCH BREAK); OR, 3 BREAKS, PLUS THE LUNCH BREAK, IN A 7-8-HOUR SHIFT.
[4] - THERE ARE 2 BREAKS , PLUS THE LUNCH BREAK, LASTING AT LEAST 8-10 MINUTES EACH OVER A 7-8 HOUR SHIFT (OR 3 BREAKS WITHOUT THE LUNCH BREAK), OR 1 BREAK OF AT LEAST 8-10 MINUTES OVER A 6-HOUR SHIFT;
[6] - THERE ISA SINGLE BREAK, LASTING AT LEAST 10 MINUTES, IN A 7-HOUR SHIFT WITHOUT LUNCH BREAK; OR, IN AN 8-HOUR SHIFT THERE IS ONLY A LUNCH BREAK (THE LUNCH BREAK IS NOT COUNTED AMONG THE WORKING HOURS).
[10] - THERE ARE NO REAL BREAKS EXCEPT FOR A FEW MINUTES (LESS THAN 5) IN A 7 TO 8-HOUR SHIFT..

[] RECOVERY

NOTES:

.....
.....
.....
.....
.....
.....
.....

• ARM ACTIVITY AND FREQUENCY OF ACTIONS WHEN PERFORMING THE TASK
(IF NECESSARY, INTERMEDIATE SCORES CAN BE CHOSEN)

<input type="checkbox"/> 0	- ARM MOVEMENTS ARE SLOW, AND FREQUENT SHORT INTERRUPTIONS ARE POSSIBLE (20 ACTIONS PER MINUTE).
<input type="checkbox"/> 1	- ARM MOVEMENTS ARE NOT TOO FAST, ARE CONSTANT AND REGULAR. SHORT INTERRUPTIONS ARE POSSIBLE (30 ACTIONS PER MINUTE).
<input type="checkbox"/> 3	- ARM MOVEMENTS ARE QUITE FAST, AND REGULAR (ABOUT 40 ACTIONS PER MINUTE), BUT SHORT INTERRUPTIONS ARE POSSIBLE.
<input type="checkbox"/> 4	- ARM MOVEMENTS ARE QUITE FAST AND REGULAR, ONLY OCCASIONAL AND IRREGULAR SHORT PAUSES ARE POSSIBLE (ABOUT 40 ACTIONS PER MINUTE).
<input type="checkbox"/> 6	- ARM MOVEMENTS ARE FAST. ONLY OCCASIONAL AND IRREGULAR SHORT PAUSES ARE POSSIBLE (ABOUT 50 ACTIONS PER MINUTE).
<input type="checkbox"/> 8	- ARM MOVEMENTS ARE VERY FAST. THE LACK OF INTERRUPTIONS MAKES IT DIFFICULT TO HOLD THE PACE, WHICH IS ABOUT 60 ACTIONS PER MINUTE.
<input type="checkbox"/> 10	- VERY HIGH FREQUENCIES (70 ACTIONS PER MINUTE OR MORE). ABSOLUTELY NO INTERRUPTIONS ARE POSSIBLE

FREQUENCY

• PRESENCE OF WORKING ACTIVITIES INVOLVING THE REPEATED USE OF FORCE IN THE HANDS-ARMS (AT LEAST ONCE EVERY FEW CYCLES DURING ALL THE TASK ANALYSED):

More than one answer can be ticked: add up the partial scores obtained. If necessary, choose intermediate scores, and then add them together.

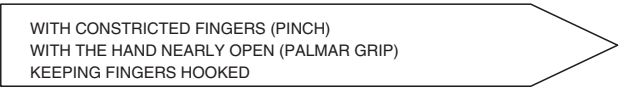
<p>THE WORKING ACTIVITY IMPLIES:</p> <p><input type="checkbox"/> THE HANDLING OF OBJECTS WEIGHING OVER 3 KG</p> <p><input type="checkbox"/> GRIPPING BETWEEN FOREFINGER AND THUMB, AND LIFTING, OBJECTS WEIGHING OVER 1 KG (IN PINCH)</p> <p><input type="checkbox"/> USING THE WEIGHT OF THE BODY TO OBTAIN THE NECESSARY FORCE TO CARRY OUT A WORKING ACTION</p> <p><input type="checkbox"/> THE HANDS ARE USED AS TOOLS TO HIT OR STRIKE SOMETHING</p>	<p><input type="checkbox"/> 1 - ONCE EVERY 5 MINUTES</p> <p><input type="checkbox"/> 2 - ONCE EVERY 1 MINUTE</p> <p><input type="checkbox"/> 4 - ABOUT HALF OF THE CYCLE (*)</p> <p><input type="checkbox"/> 8 - FOR OVER HALF OF THE CYCLE (*)</p>
<p>THE WORKING ACTIVITY REQUIRES THE USE OF INTENSE FORCE FOR:</p> <p><input type="checkbox"/> PULLING OR PUSHING LEVERS</p> <p><input type="checkbox"/> PUSHING BUTTONS</p> <p><input type="checkbox"/> CLOSING OR OPENING</p> <p><input type="checkbox"/> PRESSING OR HANDLING COMPONENTS</p> <p><input type="checkbox"/> USING TOOLS</p> <p><input type="checkbox"/></p>	<p><input type="checkbox"/> 4 - 1/3 OF THE TIME</p> <p><input type="checkbox"/> 6 - ABOUT HALF OF THE TIME</p> <p><input type="checkbox"/> 8 - OVER HALF OF THE TIME (*)</p> <p><input type="checkbox"/> 16 - NEARLY ALL THE TIME (*)</p>
<p>THE WORKING ACTIVITY REQUIRES THE USE OF MODERATE FORCE FOR:</p> <p><input type="checkbox"/> PULLING OR PUSHING LEVERS</p> <p><input type="checkbox"/> PUSHING BUTTONS</p> <p><input type="checkbox"/> CLOSING OR OPENING</p> <p><input type="checkbox"/> PRESSING OR HANDLING COMPONENTS</p> <p><input type="checkbox"/> USING TOOLS</p> <p><input type="checkbox"/></p>	<p><input type="checkbox"/> 2 - 1/3 OF THE TIME</p> <p><input type="checkbox"/> 4 - ABOUT HALF THE TIME</p> <p><input type="checkbox"/> 6 - OVER HALF THE TIME</p> <p><input type="checkbox"/> 8 - NEARLY ALL THE TIME</p>

(*) PLEASE NOTE: The conditions evidenced are absolutely unacceptable.

FORCE

PRESENCE OF AWKWARD POSITIONS OF THE ARMS DURING THE REPETITIVE TASK

RIGHT LEFT BOTH (mark the limb with greater involvement)

1	- THE ARM/ARMS ARE NOT LEANING ON THE WORKBENCH BUT ARE A LITTLE UPLIFTED FOR HALF (OR MORE) THE TIME	
2	- THE ARMS HAVE NOTHING TO LEAN ON AND ARE KEPT NEARLY AT SHOULDER HEIGHT FOR ABOUT 1/3 OF THE TIME	
4	- THE ARMS ARE KEPT AT ABOUT SHOULDER HEIGHT, WITHOUT SUPPORT, FOR OVER HALF THE TIME	
8	- THE ARMS ARE KEPT AT ABOUT SHOULDER HEIGHT, WITHOUT SUPPORT, NEARLY ALL THE TIME	<input type="checkbox"/> A
2	- THE WRIST MUST BEND IN AN EXTREME POSITION, OR MUST KEEP AWKWARD POSTURES (SUCH AS WIDE FLEXIONS OR EXTENSIONS, OR WIDE LATERAL DEVIATIONS) FOR AT LEAST 1/3 OF THE TIME	
4	- THE WRIST MUST BEND IN AN EXTREME POSITION, OR MUST KEEP AWKWARD POSTURES (SUCH AS WIDE FLEXIONS OR EXTENSIONS, OR WIDE LATERAL DEVIATIONS) FOR OVER HALF OF THE TIME	
8	- THE WRIST MUST BEND IN AN EXTREME POSITION, NEARLY ALL THE TIME	<input type="checkbox"/> B
2	- THE ELBOW EXECUTES WIDE MOVEMENTS (WIDE FLEXION-EXTENSION OR PRONO-SUPINATION) OR SUDDEN MOVEMENTS (JERKING MOVEMENTS, STRIKING MOVEMENTS) FOR ABOUT 1/3 OF THE TIME	
4	- THE ELBOW EXECUTES WIDE MOVEMENTS (WIDE FLEXION-EXTENSION OR PRONO-SUPINATION) OR SUDDEN MOVEMENTS (JERKING MOVEMENTS, STRIKING MOVEMENTS) FOR OVER HALF THE TIME	
8	- THE ELBOW EXECUTES WIDE MOVEMENTS (WIDE FLEXION-EXTENSION OR PRONO-SUPINATION) OR SUDDEN MOVEMENTS (JERKING MOVEMENTS, STRIKING MOVEMENTS) NEARLY ALL THE TIME	<input type="checkbox"/> C
GRIP OBJECTS, PARTS OR TOOLS WITH FINGERTIPS		
		
2	FOR ABOUT 1/3 OF THE TIME	
4	FOR OVER HALF THE TIME	
8	NEARLY ALL THE TIME	<input type="checkbox"/> D
PRESENCE OF IDENTICAL MOVEMENTS OF SHOULDER AND/OR ELBOW, AND/OR WRIST, AND/OR HANDS, REPEATED FOR MORE THAN 50% OF THE TIME (please cross 3 also if the cycle is shorter than 15 seconds)		E <input type="checkbox"/> 3

Use the highest value obtained among the four groups of questions (A,B,C,D) only once, and add to that of the last question **E** POSTURE

PRESENCE OF ADDITIONAL FACTORS (only choose one answer per group of questions).

2	- GLOVES INADEQUATE TO THE TASK ARE USED FOR OVER HALF THE TIME (UNCOMFORTABLE, TOO THICK, WRONG SIZE, ETC.)
2	- VIBRATING TOOLS ARE USED FOR OVER HALF THE TIME
2	- THE TOOLS EMPLOYED CAUSE COMPRESSIONS OF THE SKIN
2	- THE TASK IMPLIES REPEATED IMPACTS BY THE HAND (THE HAND IS USED AS A TOOL)
2	- OTHER ADDITIONAL FACTOR ARE PRESENT (ONE OR MORE) (SPECIFY:.....) AND, OVERALL, THEY OCCUPY OVER HALF THE TIME
3	- ONE OR MORE ADDITIONAL FACTORS ARE PRESENT, AND THEY OCCUPY THE WHOLE OF THE TIME (SPECIFY:.....)
1	- WORKING PACE IS SET BY THE MACHINE, BUT THERE ARE "BUFFERS" BY WHICH THE WORKING PACE CAN EITHER BE SLOWED DOWN OR ACCELERATED.
2	- WORKING PACE IS COMPLETELY DETERMINED BY THE MACHINE

ADDITIONAL

CALCULATING THE CHECKLIST SCORE FOR ONE TASK/WORKPLACE

To calculate the task CHECKLIST SCORE, add the values in the 5 boxes: Recovery + Frequency + Force + Posture+Additional.

CHECKLIST SCORE

EXPOSURE SCORE FOR MORE THAN ONE REPETITIVE TASK

If there is more than one repetitive task carried out during the shift, use the following procedure to obtain the overall score for repetitive work during the shift (% PZ = percentage of time spent in task Z with respect to total daily time spent in repetitive tasks)

$$\text{EXPOSURE SCORE} = (\text{score A} \times \% \text{ PA}) + (\text{score B} \times \% \text{ PB}) + \dots + (\text{score Z} \times \% \text{ PZ})$$

TASKS CARRIED OUT DURING THE SHIFT:

TASK/WORKPLACE	DURATION (min)	PREVALENCE IN TIME	(P)
A.....	(PA)
B.....	(PB)
C.....	(PC)
D.....	(PD)

EXPOSURE SCORE

SCORE CONSIDERING TOTAL DAILY DURATION OF REPETITIVE TASKS

- FOR REPETITIVE TASKS (OR PART-TIME JOBS) LASTING ONLY 2 HOURS IN SHIFT, MULTIPLY THE FINAL VALUE OF THE CHECK-LIST BY 0.50
- FOR REPETITIVE TASKS (OR PART-TIME JOBS) LASTING 3-5 HOURS IN THE SHIFT, MULTIPLY THE FINAL CHECK-LIST VALUE BY 0.75

CORRESPONDENCE BETWEEN OCRA INDEX AND CHECKLIST SCORES

CHECK LIST	OCRA	
UP TO A 7.5	2.2	GREEN = NO RISK (acceptable)
7.6 – 11.0	2.3 – 3.5	YELLOW = BORDERLINE OR VERYLOW RISK
11.1 – 14.0	3.6 – 4.5	RED LIGHT = LIGHT RISK
14.1 – 22.5	4.6 – 9.0	RED MEDIUM = MEDIUM RISK
≥ 22.6	≥ 9.1	RED HIGH = HIGH RISK