

# USER'S GUIDE TO COMPLETING THE ERGONOMIC RISK FACTOR CHECKLIST

## INTRODUCTION

The Ergonomics Risk Factors Checklist (ERF Checklist) works best as a preliminary tool for observing a job to determine the risk factors present for that job. The checklist is designed to help you identify the combination of risk factors that pose the greatest risk and/or occur most frequently for workers in an industrial environment. The checklist is divided into three sections:

- risk factors for upper extremities
- risk factors for the back and lower extremities
- risk factors associated with manual materials handling.

Within each of these sections, risk factors are assigned scores that increase with the duration of exposure. Multiple risk factors may be present for a given task, however, the scores for upper and lower back risk factors are kept separate because simultaneous exposure to risk factors in the upper and lower extremities do not generally affect the same joint or anatomic region.

## INSTRUCTIONS

### Step 1- Familiarize yourself with the job.

To complete this checklist, you will need to familiarize yourself with the job in two ways - **observation** and **interviews**.

When **observing**, stand back and watch the worker perform the job or task. You are trying to get a feel for the range of activities the worker must perform in a day.

To ensure that you are seeing everything the worker does, interview them about his or her job. The goal of the interview questions should be to see if the job fits the worker. Therefore the input of the person performing the job is a key part of the analysis.

Potential interview questions could include:

- Could you explain to me what you do?
- Is this what you do all day or do your duties change at any time?
- If you could improve this job in any way, what would you change?
- Do you feel any aches, pains, etc., that you feel are related to your job?
- If YES, what parts of your job are problematic for you?

While you are observing the job and interviewing the worker, note the following:

- **Job description** - goals and duties involved with the job (to get an understanding of why the person is performing various duties) and specific actions required to perform a specific duty (what movements a person is making and in what sequence).

- **Measurements** - general remarks about workstation, environment, the job, or the worker; any measurements you used such as mass, dimensions, temperature; anthropometric information for the worker such as body size and type and how well this matched with the workstation.
- **Notes upon completion of the risk factor analysis** - which tasks contained which risk factors and which tasks caused trouble for the worker.

### Step 2 - Determine which risk factors are present

The next step is to determine which risk factors the person is being exposed to over the course of a day. Be sure to review the risk factors before completing the checklist.

You should look at each risk factor and observe the job to determine if the person is exposed to this factor at any time. On the checklist, under the EXPOSURE column check YES if exposure to a risk factor exists. If the risk factor does not occur with this job, then check NO. Once you have addressed all of the risk factors, you can move to the next step.

### Step 3 - Determine the duration of exposure to the risk factors

In Step 2, you determine **what** risk factors the person is being exposed to. Now you must determine **how long** the person is exposed to each risk factor. For every risk factor that you recorded as a YES in the EXPOSURE column, you will now evaluate the length of exposure to that factor. You do not need to address the risk factors you recorded as NO (not present) in Step 2.

For this checklist, **duration of exposure** means how long a person experiences the risk factor in question, not how long the person does a task or a job. For each risk factor, you will calculate the percentage of time the person is exposed to the risk factor throughout their entire shift.

## HOW TO CALCULATE %

**Converting seconds to minutes** - divide the number of seconds by 60

For example 45 seconds = .75 minutes ( $45 \div 60 = .75$ ) or 75% of a one minute cycle

**Converting minutes to hours** - divide the number of minutes by 60

For example 15 minutes = .25 hours ( $15 \div 60 = .25$ ) or 25% of an hour

**Calculating % of a shift** - divide the number of hours by total number of hours worked

For example 4.25 hours = .5625 of an 8 hour shift ( $4.25 \div 8 = .5625$ ) or 56.25% of an 8 hour shift

**SAMPLE:** Joe works 8 hour shifts. He performs a task on a production line that takes 60 seconds, and he repeats this task for 4 hours. During the time it takes him to complete each 60 second task, he works with his wrist deviated (a risk factor) for 45 seconds.

- 45 seconds  $\div$  60 seconds = .75 minute
- He repeats this task every minute of the hour:  $.75 \times 60$  minutes = 45 minutes 45 minutes  $\div$  60 minutes = .75 hour
- We know that Joe works with deviated wrists 75% of every hour for 4 hours:  $.75$  hour  $\times$  4 hours = 3 hours
- 3 hours  $\div$  8 hour shift = .375 or 37.5%

Conclusion: Joe worked with his wrists deviated 37.5% of his entire shift.

Regardless of the length of the shift, the principle is the same for determining duration of exposure. Just remember that you are measuring how long the person is exposed to the individual risk factor, which does not always correspond to the actual duration of the job.



The checklist provides three TIME options (0% to 25 percent, 25% to 50%, or 50% to 100%). In each box, you will find a number between 0 and 3. This number is the score. Once you have determined the duration of exposure for a risk factor, select the corresponding column and circle the score in the appropriate box. Write down this score in the far right column.

#### **Step 4 - Evaluation of manual materials handling**

The Manual Materials Handling (MMH) section of the ERF checklist is designed to evaluate the risk factors associated with lifting and carrying materials. The MMH section focuses on such variables as the location, weight of the item being lifted as well as the duration of the lift and the posture of the person while handling the item.

There are 3 distinct steps

**Step 1** - Determine the horizontal distance of the load from the body. These ranges refer to the distance from the toes of the person to the middle knuckles on their hand. The distance is divided into three categories: near (0-4 inches), middle (4-10 inches), and far (more than 10 inches).

**Step 2** - Estimate the weight of the item being lifted. If an item is lifted every 10 minutes or less, then use the average weight of all the items being lifted. If more than 10 minutes pass between lifts, then use the heaviest weight that the person lifts. Once you have established the weight of the item, combine this information with your estimate of horizontal distance and use Table 34(b). STEP II on page six to determine your score.

For example: A job where a person lifts a 20 pound load at a middle distance from the body, (4-10 inches) would receive a score of three points. If the person does not lift any items greater than 10 pounds, then a score would be 0.

**Step 3** - Evaluate the other risk factors that are relevant to handling loads. This third step is separate from Step 2, so even if the score is 0 in Step 2, you should still fill out this section.

If lifting is only occasional and more than 10 minutes pass between lifts, then choose a score from the first column OCCASSIONAL LIFTS. If the risk factor occurs with most lifts, and lifting occurs for more than one hour, then you will be using scores from the FREQUENT LIFTS column. Once you determine the column you will be using, determine whether the person is exposed to any of the risk factors listed. If a risk factor is present, circle the score in the appropriate column and transfer the number to the far right column. Once you have evaluated all of the risk factors, add up the scores and place the total in the box STEP III SCORE.

Once you have completed the MMH section of the checklist, add the scores from STEP II and STEP III. Take this total and add it to the last row of the Back and Lower Extremity section on page 5.

#### **Step 5 - Add up the checklist scores**

Add the scores in the far right column for each section and record the total at the end of the section. Total Scores greater than or equal to seven indicate the job is hazardous. Individual risk factor scores greater than two indicate the risk factor should be addressed.

#### **Step 6 - Opportunities for improvement**

Record any actions you feel could be performed to improve the job. Are there any recommendations you can make and what areas need further attention before decisions are made? The key is to record some ideas while you are there and the information is fresh in your head. Do some quick brainstorming and try to write at least two or three ideas. You can record your thoughts in the comment sections.

Visit [safemanitoba.com](http://safemanitoba.com) for more information on the role of ergonomics in the workplace.

