

An Employer's Guide to Ergonomics

Ergonomics is the science of designing the job and the workplace to fit the worker, thus allowing the work to be done more safely and efficiently. The benefits derived from improving the work environment are many and include:

- Improved work quality
- Greater productivity
- Reduced absenteeism and turnover
- Higher morale
- Prevention of musculoskeletal disorders (MSDs), including fewer back injuries

An effective MSD prevention program must recognize and accommodate the physical differences between workers (see Zenith's Risk Management Bulletin "Elements of an Effective MSD Prevention Program"). No two people are built alike. Two people of the same height may have a different range of arm reach and two people of the same weight may differ greatly in strength. The key is to fit the workstation and the work to the worker.

The physical stress inherent in any job depends on three main factors:

- The amount of force applied
- How often a task or job element is repeated (repetition)
- The body posture(s) required

All three of these factors must be considered in evaluating the ergonomic "appropriateness" of a job. Tasks which require high forces do not have to be repeated frequently to cause injury, such as lifting heavy loads. On the other hand, highly repetitive tasks, like computer keyboard entry, can increase the risk of developing an MSD even though they involve seemingly insignificant forces (see Zenith's Risk Management Bulletin "Office Ergonomics").

Other work characteristics which might be significant to note include size and shape of material, direct contact with hard surfaces (contact stress), hot or cold environments, floor conditions, tool design and use, toxic exposures and even boredom.

Perhaps the most critical factor in determining the risk of MSD development is the pattern of the work, such as the duration of exposure, the diversity of tasks, and rest break scheduling. Diversifying work tasks and providing for frequent rest breaks may help reduce the exposure to some risk factors.

Personal factors such as age, fitness levels, or certain conditions and diseases can also make some people more susceptible to MSDs than others.

With all this information in hand, it is then possible to proceed with a plan to modify the job or task so that the goal of improved work efficiency and reduced injuries can be achieved. The following are some simple guidelines that you can use to implement your own ergonomics program.

ASSEMBLE AN ERGONOMICS TEAM

Representatives of every area involved in an ergonomic assessment should participate in designing and implementing the change. An ergonomics team, combining individual insights and perspectives, can bring far more knowledge and experience to the

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process than any individual working alone. It is important to remember that employees can provide excellent suggestions for task improvements or job modifications. Also, workers who have been involved in the decision-making process are more likely to accept the changes.

Although a hands-on knowledge of job processes is extremely important, the ergonomics team will be most effective if the people involved have some knowledge of how physical stress in industrial operations is identified and controlled. Thus, all members of the ergonomics team should get some training in basic ergonomic principles and job analysis techniques.

REVIEW EXISTING RECORDS

The first step in any ergonomics assessment is to review existing records to determine what areas of the production process may have contributed to MSDs in the past. A records review can also provide information on injury/illness frequency and severity, which can be useful in prioritizing remediation efforts and identifying similar exposure groups (SEGs) within the work force. Sources of injury/illness data include OSHA logs and workers' compensation records. Quality and productivity records can also indicate "problem jobs" that need further investigation. Complaint logs and absenteeism reports are additional sources of information that can be used to profile a job's MSD risk.

SURVEY THE OPERATION

This part of the process may consist of a quick Ergonomic Job Survey (EJS) or a more in-depth Ergonomic Job Hazard Analysis (EJHA) to identify and prioritize uncontrolled MSD risk factors. Videotaping an

operation or process is an excellent way to survey an operation.

Look at the positions and activities of workers at each work station. Note the number of different operators who use the same work station and their physical differences. Often a tall man and a short woman may, at different times, need to use the same work station.

- Pay attention to tasks which require workers to:
- Bend while reaching
- Reach above shoulder height
- Twist while lifting
- Lift excessive weights (usually more than 25 pounds)
- Use fingers to apply force
- Do repetitive motions with wrists bent
- Repetitively apply force with hands
- Support heavy tools while working

Remember that one size seldom fits all, especially in the workplace. Adjustability is the key; wherever possible, the worker should be able to adjust the work area to his/her physical capacities.

PLAN SOLUTIONS

After problem areas are identified, the next step is to decide how they are to be modified. It is very important at this point to determine how a change in one area of an operation may affect those up and downstream from it. For example, if workers in one area can assemble more parts after a workplace modification, will this adversely affect workers in a packaging operation? Or, does the plan account for the limits of an automated machine operation?

Ergonomic Assessment Processes	
<p><i>Ergonomic Job Survey (EJS)</i>—An EJS generally involves simple observations of the work. Often checklists are used. The EJS is designed to be a "quick check" of the work to quickly identify obvious problems.</p>	<p><i>Ergonomic Job Hazard Analysis (EJHA)</i>—An EJHA involves a more in-depth assessment of a job than an EJS. An EJHA employs relatively detailed data gathering activities such as physical measurements of work stations and work processes. Often an EJHA will include the use of "scoring" tools to semi-quantitatively score or rank a job's ergonomic risk.</p>

IMPLEMENT YOUR PLAN

Once you have identified problem areas, and devised a plan of action, you are ready to implement the appropriate job and process modifications. The plan should be easy to implement, oriented towards results, and cost effective. Keep in mind that it is often more cost effective to test a planned modification in one area before implementing it throughout the operation or process. This is more critical when such modifications are costly. If testing is to be done, don't choose the best or the worst worker to be the test subject. This may give a false picture of the real effectiveness of the new system.

MONITOR CHANGES THAT ARE MADE

This final step should be ongoing. New methods of operation must be reviewed regularly to be sure they are functioning as planned. Ideas, at times, don't transfer directly to the action desired. Adjustments or further changes may be necessary. Moreover, even when the modification works perfectly, the effects should be noted and quantified. By applying these simple steps to all of your operations, you can significantly improve the quality of your work environment and reduce the costs of unnecessary illness and injury due to poor ergonomic designs. Your Zenith Safety & Health consultant can assist you in applying ergonomics to your particular operation.

For further information or assistance, contact your Zenith Safety & Health consultant