

UNDERSTANDING ERGONOMIC RISK ASSESSMENTS

Presenter: Sethunya Matsie

Ergonomist

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- The primary objective of an ERA is to identify, evaluate, & analyse ergonomic risks
- Ergonomic risks are defined in the Ergonomics Regulations as:
 - A characteristic or action in the workplace, workplace conditions, or a combination thereof that may impair overall system performance and human well-being
- It is the responsibility of the competent person conducting the ergonomics assessments to identify, analyse & evaluate all the relevant ergonomic risk factors whether they are organisational, cognitive or physical





- Certain actions in the workplace, workplace conditions or a combination thereof may result in injury or strain, impairing human well-being
- Some of these actions and/or workplace conditions include:



TASK/ACTIVITY-RELATED PHYSICAL RISK FACTORS

- Working in awkward postures
- Bending
- Compression or contact stress
- Forceful exertions
- Insufficient rest breaks
- Lifting heavy items

- Pushing, pulling heavy loads
- Reaching
- Reaching overhead
- Repetitive motions
- Static or sustained postures
- Vibration



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TASK/ACTIVITY-RELATED COGNITIVE RISK FACTORS

- Complex, unfamiliar task
- Sustained attention tasks
- Monotonous, repetitive tasks
- Cognitive workload
- Excessive memory demands
- Divided attention tasks



ENVIRONMENT-RELATED (PHYSICAL AND SOCIAL) RISK FACTORS

Noise

- Temperature (cold or hot)
- Poor ventilation
- Poor or substandard lighting
- Chemical/dust exposure
- Poor layout/house keeping
- Uneven surfaces

- Lack of control of work
- Lack of autonomy
- Poor communication
- Lack of participation in decisions
- Bullying
- Lack of social interaction during work



TECHNOLOGY / TOOL-RELATED RISK FACTORS

- Poorly designed tools
- Tools not fit for purpose
- Tools/technology not suited to the use by SA workforce
- Lack of PPE or poorly designed or maintained PPE
- Poor design of visual displays





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- These workplace ergonomic risks can be intensified by work organization characteristics (work methods).
- Some of these actions and/or workplace conditions include:

ORGANISATIONAL RISK FACTORS

- Inadequate work-rest cycles
- Excessive work pace and/or duration
- Lack of task variability
- Piece rate
- Machine-paced work
- Inadequate rest
- Unaccustomed work

- Disruptive working times
- Night shift work
- Early morning work
- Extended shifts
- On call work
- Extended working weeks
- Poorly designed shift Convright © (2020) Ergonomics Society of South Africa combinations





What is an Ergonomic Risk Assessment?

Definition:

 An Ergonomic Risk Assessment (ERA) is a programme, process or investigation implemented to identify, analyse, evaluate and prioritise any risk from exposure to ergonomic risks associated with the workplace



• ERAs are an important component of an Ergonomics programme





What is an Ergonomic Risk Assessment?

- ERAs assess interactions among humans & other elements of a system to determine what is or isn't acceptable for optimum human well-being and overall system performance
- ERAs determine the level of ergonomic risk present in a job, task or workplace under evaluation AND present a clear view of the ergonomic risks present in the workplace.
 - Only by quantifying ergonomic risk factors can a plan to prioritize and implement measurable workplace improvements be developed
 - A clear understanding of the ergonomic risks enable the effective communication, prioritization, and implementation of workplace improvements
- As such, ERAs are a backdrop for any ergonomic improvement efforts that an organisation employs



The Purpose of Ergonomic Risk Assessments

- Used to identify ergonomic deficits, hazards, stressors & risks in a workplace
- ERAs are used to:
 - Predict the possible effects of working conditions on human well-being and overall system performance
 - Improve performance, job satisfaction and efficiency
 - Specify interventions required to manage the risks identified
 - Reduce the potential for workplace injury and ill health
 - Reduce the potential for accidents at work





According to regulation 6.1 of the Ergonomics Regulations, an ERA must be conducted:

- Before the commencement of any work that may expose employees to ergonomic risks
- By a competent person
- After consultation with the health and safety committee established in respect of a workplace under the employer's control or the health and safety representatives designated for that workplace or for different sections thereof





Regulation 6.2 stipulates that an ERA must:

- be conducted at intervals not exceeding two years, and
- include:
 - 1. A complete hazard identification
 - 2. The identification of all persons who may be affected by the ergonomic risks
 - 3. How employees may be affected by the ergonomic risks
 - 4. The analysis and evaluation of the ergonomic risks
 - 5. The prioritisation of ergonomic risks



According to Regulation 6.3, an employer is required to review the relevant ERA made in accordance with subregulation (1) if:

- a) Such assessment is no longer valid
- b) Control measures are no longer effective
- c) Technological or scientific advances allow for more effective control methods
- d) There has been a change in:
 - a) The work method
 - b) The type of work carried out
 - c) The type of equipment used to control the exposure
- e) An incident occurs or medical surveillance reveals an adverse health

effect, where ergonomic risks are identified as a contributing factor





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- Conducting a complete hazard identification means finding and recording ergonomic hazards & risks that have the potential to impair human well-being & overall system performance that may be present in the workplace
- The complete process involves:
 - The identification of ergonomic hazards & risks presented by the tasks, jobs, work processes, environment & workplace
 - The examination and assessment of the risks associated with the ergonomic hazards & risks
 - Determining appropriate ways of eliminating the hazards & risk factors, or of controlling the risks when the ergonomic hazards cannot be eliminated (ergonomic risk control)



Some ergonomic assessors conducting hazard identifications start with a worksite tour. During this tour, they may:

- Evaluate all aspects of the work and include non-routine activities such as maintenance, repair, or cleaning
- Assess the physical work environment, equipment, materials, products, etc. that are used
- Observe work activity & how the tasks are done, noting how work is organised
- Inspect injury & incident records, room or work area plans, sickness absence reports, health surveillance reports, personnel records etc.
- Note the way the work is organised & the systems in place
- Interview & distribute questionnaires to the workers
- Assess all shifts design methods, & people who work off site either at home, on other job sites, drivers, teleworkers, with clients, etc.





- The benefit of conducting a worksite tour is it provides an opportunity to identify all the tasks where an employee is exposed to ergonomic risks so that an ERA can be conducted on these tasks
- A job hazard analysis, in addition to the worksite tour, may used at this stage of the assessment process to screen for ergonomic hazards at the job level
- Once the tasks, work areas, work environments etc. where employees are exposed to ergonomic risks have been identified, a simple risk assessment may also be used to identify and document levels of risk exposure
- A simple risk assessment can also provide an ergonomics assessor with a list of tasks for further evaluation using an objective tool



A hazard identification can be done at the following intervals:



2. Identification of Persons Affected by Ergonomic Risks

- Once a worksite tour, job hazard analysis and simple risk assessment have been conducted, the ergonomics assessor will be able to identify existing ergonomic risks & the persons affected by said risks
- The ergonomic assessor is likely to successfully identify persons affected by ergonomic risks by pinpointing the people who work in the specific job levels, areas, environments and/or workplaces where the ergonomic risks were documented
- An ergonomics assessor would likely also note the groups of people that may have a different level of risk due to their experience level, health status or physical condition such as young or inexperienced workers, persons with disabilities, or new or expectant mothers





3. Determining Effects of Ergonomic Risks on Employees

- The effects of ergonomic risks on employees can be determined after ergonomic hazards & risks have been identified, examined and assessed
- Ergonomic risks can result in:
 - Injury
 - Fatigue
 - Discomfort
 - Low back pain
 - CTS
 - Poor performance
 - Increased error or rejection rate
 - Absenteeism



 The extend of the effects will depend on the task variety, duration of exposure, frequency of exposure, and the interaction effects



4. Analysis & Evaluation of Ergonomic Risks



- There are a variety of ergonomic analysis methods that exist however, the different analysis methods tend to focus on different aspects and employ different approaches
- Every analysis & evaluation of ergonomic risks should ideally be conducted from an objective point of view
- The analysis & evaluation of ergonomic risks should include clearly detailed task or job requirements
- An analysis and evaluation may be conducted on tasks, work layout design, job design, environment or for resources involved



4. Analysis & Evaluation of Ergonomic Risks

- Ideally, an ergonomics assessor will select a relevant risk assessment tool(s)
- A complete job-specific risk checklist and task analysis to examine employee exposures in the workplace and provide accurate qualitative information about the ergonomic risks present in a particular task can be conducted
- An analysis & evaluation of ergonomic risks can also be conducted using several other tools



5. Prioritisation of Ergonomic Risks

- Prioritisation of ergonomic risks should depend on the severity of identified risks
- Workplaces with the most severe risks should be managed first, followed by the less severe risks
- Identified risks must remain limited to ensure optimum human well-being and overall system performance





Ergonomic Assessment Tools

- There is no universal assessment method or tool that can be applied to all tasks, jobs & workplaces
- The appropriate tool or method must be selected
- ERA tools vary, some are:
 - Quantitative & others qualitative
 - Generic
 - Designed for specific jobs
- Ergonomic assessment methods exist as:
 - Checklists
 - Posture-based analysis tools
 - Cognitive-based analysis tools
 - Biomechanics-based analysis tools
 - Multi-aspect analysis tools etc.







Ergonomic Assessment Tools

- Each assessment method has limitations
- Majority of ergonomics assessment tools require some knowledge of ergonomics
 - Not be appropriate for use by those with little or no training
- Providing tools without proper training can lead to more harm than good



Ergonomic Assessment Tools

- Selecting & using ergonomic tools warrants careful study and consideration.
 Proper selection can yield relevant data, widespread use by employee ergonomic teams, and process credibility with managers
- It is important that the selection & use of appropriate tools be conducted by a competent & experienced person
- Choosing inappropriate tools can frustrate teams, confuse managers, and yield data that does not adequately assess risk. This can compromise the entire ergonomics process and its credibility



Conclusions

- ERAs are conducted to identify, evaluate, & analyse ergonomic risks
- ERAs are useful for reducing workplace injuries and accidents as well as improving performance, job satisfaction and efficiency
- ERAs must be conducted before the commencement of any work that may expose employees to ergonomic risks by a competent person
- ERAs must be conducted and reviewed every 2 years and recorded
- They must include:
 - A complete hazard identification
 - The identification of persons affected by ergonomic risks
 - A determination on the effects of ergonomic risks on employees
 - An analysis & evaluation of ergonomic risks
 - A prioritisation of ergonomic risks



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THANK YOU

CONTACT DETAILS

Sethunya Matsie

Ergonomics Society of South Africa (ESSA) Events Portfolio www.ergonomicssa.com ergonomicssa@gmail.com

