

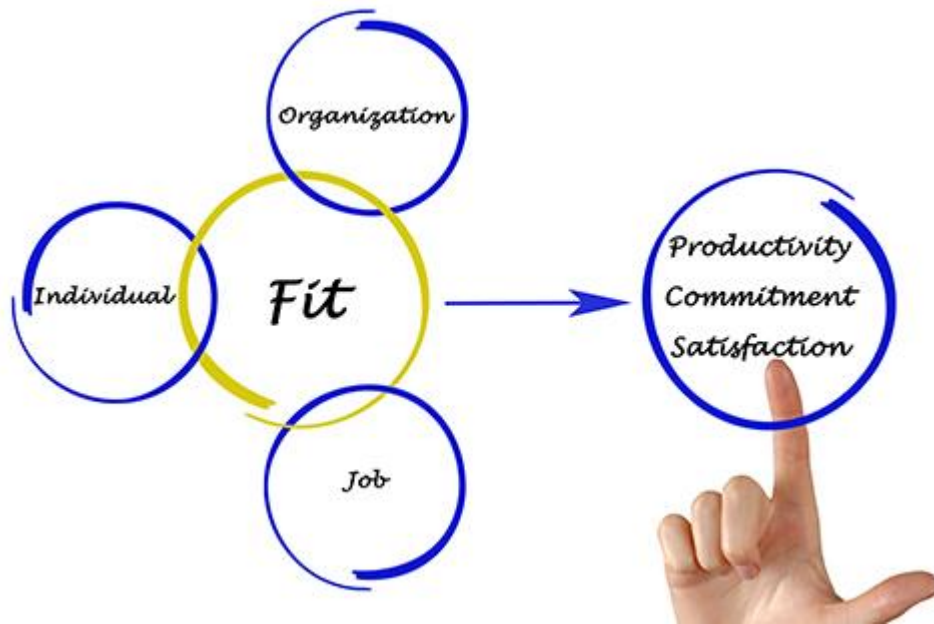
Session 5 – Ergonomics at Work and Human Factors

Definition of Ergonomics

Human factor and ergonomic has been a standardized as synonymous for a long time and has great potential to contribute in designing all kinds of systems with people. However, some opinions draw precisely distinctions among these terms. Numerous studies have been conducted in their attempt to understand the concept of human factor and ergonomic. The meaning of each term must be clearly understood before using them in any research to understand how human beings interact with surroundings (Salleh and Sukadarin, 2018).

Ergonomics can be defined as the relationship between humans and their working environment. It is vital for the workers to understand and knowing their job tasks and the possible work risk because it could endanger with musculoskeletal disorders (MSDs) if they did not understand the risk factors. In order to ergonomically fit the workplace for maximum workers at various conditions, it is necessary to make an ergonomic evaluation of the workplace.

An ergonomically deficient workplace can cause physical and emotional stress, low productivity and poor quality of work ([Karwowski & Marras, 1998](#)). Neglect of ergonomics principles brings inefficiency and pain to the workers and at last the workers will be suffering from musculoskeletal disorders (MSDs). Musculoskeletal Disorders (MSDs) are among the most serious consequences caused by the improper work-related musculoskeletal load. Symptoms of MSDs are defined as pain in one or more regions of the body. Accumulated minor injuries that resulted from repeated long-term work-related load can be considered as the main caused of MSDs.



Typical Ergonomics problems found at the workplace

1. Design of tasks

Work demands are too high or too low.

The employee has little say in how they organise their work.

Badly designed machinery guards (awkward to use or requiring additional effort) slow down the work.

Conflicting demands, eg high productivity and quality.

2. Manual handling

- The load is too heavy and/or bulky, placing unreasonable demands on the person.
- The load has to be lifted from the floor and/or above the shoulders.
- The job involves frequent repetitive lifting.
- The job requires awkward postures, such as bending or twisting.
- The load can't be gripped properly.
- The job is performed on uneven, wet, or sloping floor surfaces.
- The job is performed under time pressures and doesn't include enough rest breaks.

3. Workstation layout

- Items that are used frequently are out of convenient reach.
- Inadequate space under work surface for legs.
- Work surface height inappropriate for the tasks causing awkward and uncomfortable postures.
- Lighting inadequate causing eyestrain when inspecting detail on work items.
- Chair not properly adjusted to fit the person and workstation.

4. Managing the working day

- Not enough recovery time between shifts.
- Poor scheduling of shifts.
- Juggling shifts with domestic responsibilities.
- Employees working excessive overtime.

Checking for Ergonomics hazards at the workplace

Checking for human factors problems is part of the normal risk assessment process. The first step in a risk assessment is to identify the hazards. This can be done by talking to employees and seeking their views, walking around the workplace to see if any hazard is spotted, and reviewing any accidents or reports of ill health the organisation have had in the past.

Talking to employees

Workplaces where employees are involved in taking decisions about health and safety are safer and healthier. Collaboration with the employees helps to manage health and safety in a practical way by:

- spotting workplace risks;
- making sure health and safety controls are practical;
- increasing the level of commitment to working in a safe and healthy way.

The employer is legally required to consult all the employees, in good time, on health and safety matters. In workplaces where a trade union is recognised, this will be through union health and safety representatives. In non-unionised workplaces, consultation is directly or through other elected representatives. Consultation involves employers not only giving information to employees but also listening to them and

taking account of what they say before making health and safety decisions. Employees have important knowledge of the work they do, problems they have, and their impact on health, safety, and performance. While talking to them, some specific questions about their work should be asked such as:

- are their working postures comfortable (or not)?
- do they experience discomfort, aches, pain, fatigue, or feel unable to keep up with the flow of work?
- is the equipment appropriate, easy to use and well maintained?
- is the person satisfied with their working arrangements?
- do they make the same errors and mistakes repeatedly?
- are they following procedures, and if not, why not?

Hazard spotting

While a walkaround is done at the workplace, look for signs of poor or inadequate equipment design such as:

- improvised tools;
- handwritten reminders, or handwritten labels on machinery controls;
- plasters on workers' fingers or 'home-made' protective pads made of tissue or foam.

Review information you may already have about accidents and ill health which may result from human factors problems:

- Look at the circumstances that lead to frequent errors or incidents. Try to identify the root causes of people's mistakes. Use accident reports to identify details of incidents and their possible causes.

References

Shang, L. T., Thiruchelvam, S., Rusli, M. E., & Ghazali, A. (2020). A Systematic Approach Of Ergonomics Assessment Tool Selection. European Proceedings of Social and Behavioural Sciences (pp. 708-718). European Publisher. <https://doi.org/10.15405/epsbs.2020.12.05.77>

["Ergonomics and human factors at work"](#) by HSE is licensed under [CC BY 4.0](#)