Ergonomics and Ergonomic Hazards – Part 1
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Learning Outcomes
Having completed all of the learning activities associated with this lecture, you should be able to:
- Define ergonomics and explain its role in OSH Management.
- Explain the importance of physiology, the mechanisms of serious injury and how to prevent them.

Definition
Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimize human well being and overall system performance.

Contemporary Ergonomics
It started with the second world war – scientists & engineers were tasked to simplify fighter plane cockpits to make them more intuitive to operate

Ergonomics in Occupational Health and Safety?

\[
\text{why?} = \frac{36824}{10} + \frac{5324}{100} + \frac{28791}{200}
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Top Occupational Injury Type in the EU

Occupational cost of musculoskeletal injuries in the European Union runs into billions of Euro and is increasing ~1.6% Gross Domestic Product (GDP).

EU Attempt To Reduce MSDs

A Little Background on MSDs
- Describes a wide range of inflammatory and degenerative diseases and disorders.
- Result in pain and functional impairment.
- Primarily affects the neck, shoulders, elbows, forearms, wrists, hands and back.
- Body structures such as muscles, joints, tendons, ligaments, nerves and bones can be aggravated.
- Considered to be work related when the work activities significantly contribute to their development.

Common MSDs

MSC Pathomechanisms
- Given the range of soft tissues involved, it’s acknowledged that a single mechanism linking occupational exposure to the development of MSDs has not been identified.
- However, understanding the human body is the first step in preventing MSDs.
Understanding The Human Body...
By knowing the boundaries and limitations of human capabilities, it is possible to design work for those limitations. This includes physical and mental aspects. Combined this will reduce the potential to sustain occupational MSDs.

What Not To Do!
Cranfield Man

Summary
- Definition of ergonomics.
- Role of ergonomics in occupational health and safety.
- Regulatory requirements.
- What are MSDs.
- Common types of MSDs.
- Understanding human capabilities to prevent the onset of MSDs.

Ergonomics and Ergonomic Hazards
Part 1
What is ergonomics?
Ergonomics role in occupational health and safety
Regulatory requirements
When ergonomics fails – Occupational Musculoskeletal Disorders

Part 2
Ergonomics risk factors
Examples of ergonomics risk assessments
Corlett’s principles