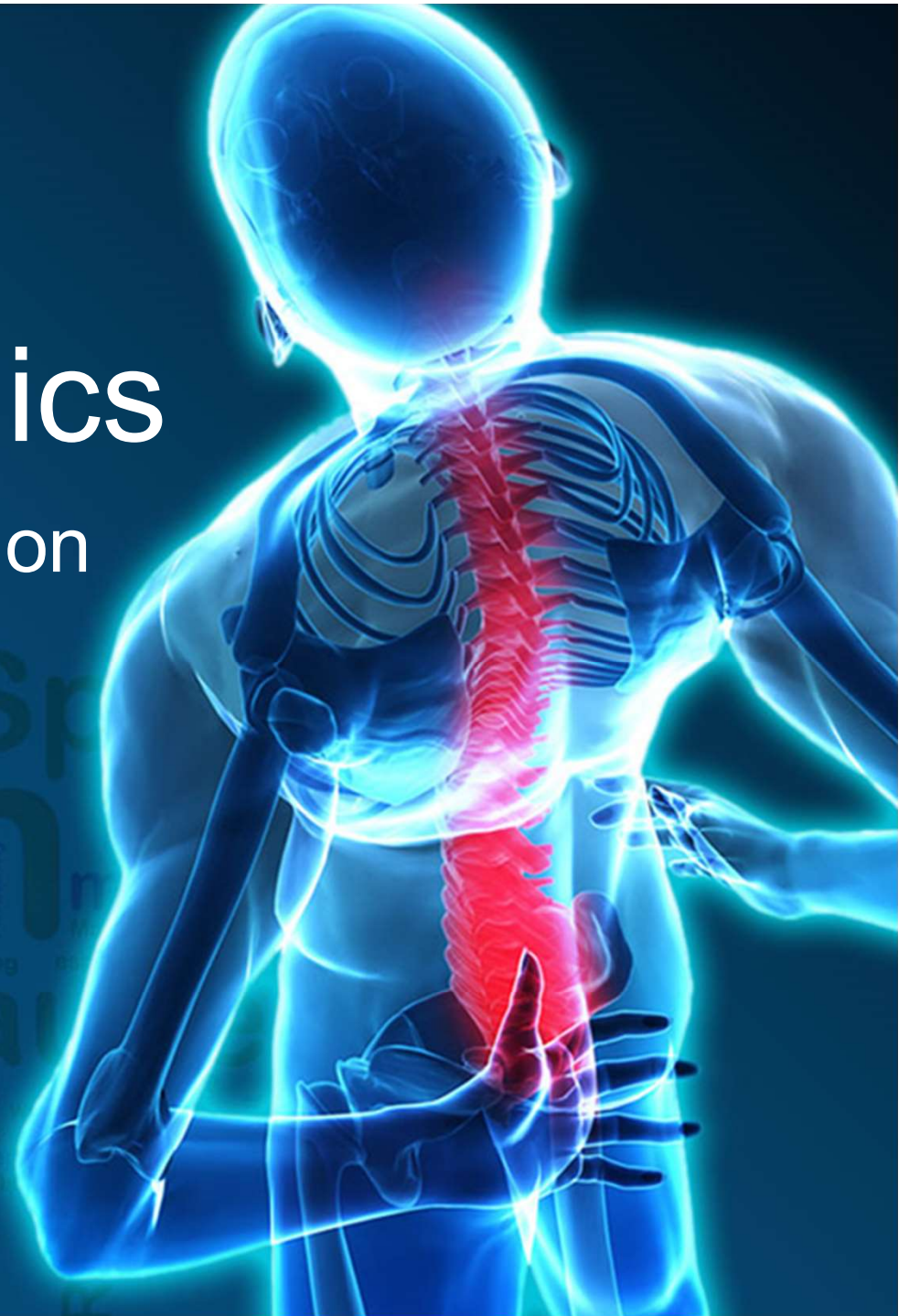




# Basic Ergonomics

Workshop Edition



**The Safety Cat**

Our Order Form



# What is Ergonomics?

Ergonomics can be **defined as how** the workplace & equipment can be best used & designed for the comfort of the Worker

🧑 **Fit the Job to the Worker**, not

🧑 The Worker to the Job

If **good fit** is achieved, the stresses are **reduced**

Derived from 2 **Greek** words “*Ergon*” meaning work & “*nomos*” meaning laws

*Also referred to as **Musculoskeletal Disorders (MSDs)***



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# Types of Ergonomics

Ergonomics is generally **broken-up** into three disciplines or specialties:

- 🧑 **Physical Ergonomics**
- 🧑 **Cognitive Ergonomics**
- 🧑 **Organizational Ergonomics**



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# 1

## Physical Ergonomics

Human anatomical, anthropometric, physiological & biomechanical characteristics as they relate to physical activity:

- 👤 **What** can/can't a person do?
- 👤 **How much** can/can't a person do?
- 👤 **Where** does the person do the task?




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# Legislation

Although there is **no direct Ergonomics legislation**, numerous references exist that declare the safe moving of materials:

-  *Material, articles or things required to be lifted, carried or moved, shall be lifted, carried or moved in such a way & with such precautions & safeguards, including protective clothing, guards or other precautions as will ensure that the lifting, carrying or moving of the material, articles or things does not endanger the safety of any worker*



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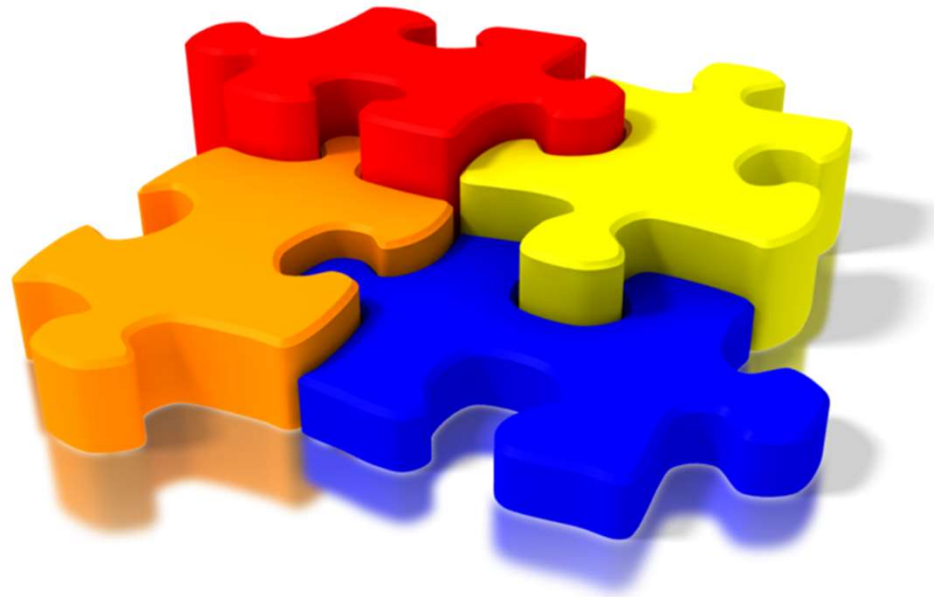




# Ergonomic Process

The process/action of Ergonomics takes place in four steps:

- 1. Assess**
- 2. Plan**
- 3. Measure**
- 4. Scale**






# Ergonomic Factors

Ergonomic principles are **centered around** two particular factors:

 **Human** factors

 How **humans** behave physically & psychologically

 **Workplace** factors

 Design, layout, & workstation set-up



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# Human Factors

Human factors is the **study** of how humans **behave** physically & psychologically in **relation** to **particular** environments, products, or services

The term “*usability*” is sometimes used as an alternative to “*human factors*” & a **usability-study**: which includes Ergonomics, may be done in the workplace to determine:

- 🧑 How **design** affects the user
- 🧑 How the user **interacts** with an item/space
- 🧑 How **technology** interacts with the user





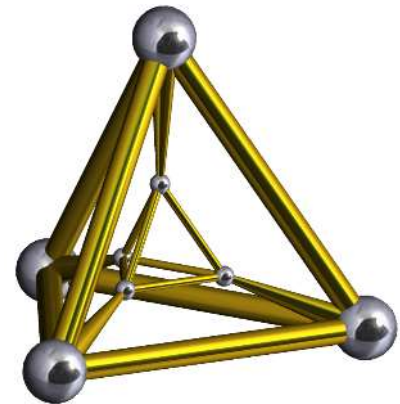


# 12 Ergonomic Principles

1. Work in Neutral **Posture**
2. Reduce excessive **Force**
3. Keep everything in **Reach**
4. Work in the **Power Zone**
5. Reduce excessive **Motions**
6. Minimize fatigue & static **Load**
7. Minimize pressure **Points** (*contact stress*)
8. Provide **Clearance**
9. **Move**, exercise & stretch
10. Maintain a comfortable **Environment**
11. Reduce excessive **Vibration**
12. Provide adequate **Lighting**



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# Neutral Posture

Neutral postures are where the body is **aligned & balanced** while either sitting or standing

Every joint has a “*range of motion*”, Neutral Posture is approx. **50%** of that range

This will **minimize** the **stress** applied to muscles, tendons, nerves & bones

The **opposite** is an “*awkward posture*” which move away from Neutral Posture toward the **extremes** in range of motion



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# Keep Everything in Reach

Manual tasks should be designed to maintain **vertical alignment** of the spine & **avoid** constant stress on the shoulders & neck

Place items according to **importance** & **how often** you will use them:

- 👤 **Primary** zone – *immediate reach*, for items needed most frequently or of *highest importance*
- 👤 **Secondary** zone – within *arm's reach*, for items of lower importance or *used occasionally*
- 👤 **Tertiary** zone – area *farthest away* which requires you to bend forward to reach, for *rarely used* items

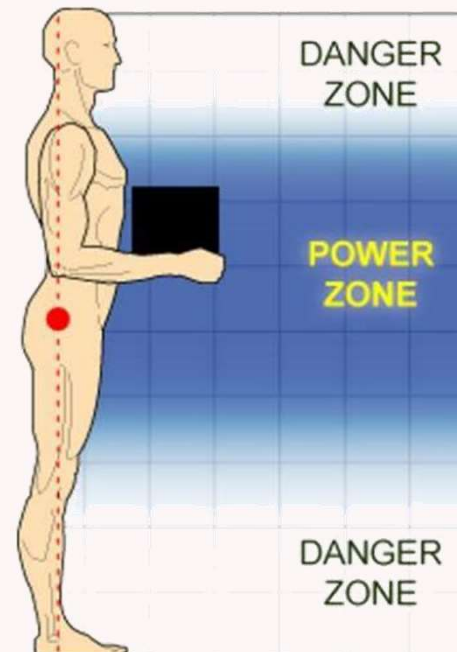
# 3





# Work in the Power Zone

- 👤 Working at the **right/comfortable** height makes things much easier
- 👤 Sometimes correct height can be achieved by **adding** extensions (or **avoiding** extensions) on chairs or tables
- 👤 Try to keep heavy work **above the knees (waist) & below the shoulders**



# 4





# Maintain a Comfortable Environment

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- 👤 This principle is **focused on the working environment**, not the Worker
- 👤 Includes:
  - 👤 **Lighting**
  - 👤 **Accessibility**
  - 👤 **Ventilation**
  - 👤 **Noise**
  - 👤 **Logical path/work-flow**





# Benefits of Ergonomics

The benefits of a **well-designed** Ergonomic workplace include:

- 🧑 **Reduced Costs / Injuries**
- 🧑 **Improved Quality** of Work
- 🧑 **Emotional** / Additional Benefits
- 🧑 **Increased Productivity**



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# Emotional / Additional Benefits

- ‡ Helps to **reduce absenteeism** due to more comfort, safety & healthy working environment
- ‡ **Assurance** to the Worker as their workplace is safer (*acts as the motivation*)
- ‡ More **focus** on the working environment & Worker's health makes them feel **valued & boost** of moral



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# MSD Prevention

Senior Management must provide the leadership, vision & resources needed to implement an effective **MSD prevention** program

An **effective** OH&S program includes the **meaningful participation of Workers** who know their jobs & are aware of potential hazards

Management **must** review the workplace processes & identify areas of risk & **plan** for improvement



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# Avoid Repetitive Action

Occupations requiring repetitive tasks are leading to **strain & pain**

- 👤 Design work-flow around multi-skilled Workers that perform a **variety of tasks**
- 👤 **Limit** a workers keyboard & screen-time
- 👤 **Crosstrain** Workers & create a work-rotation or job-sharing program
- 👤 When working in a Crew, **share** a variety of tasks among the Workers



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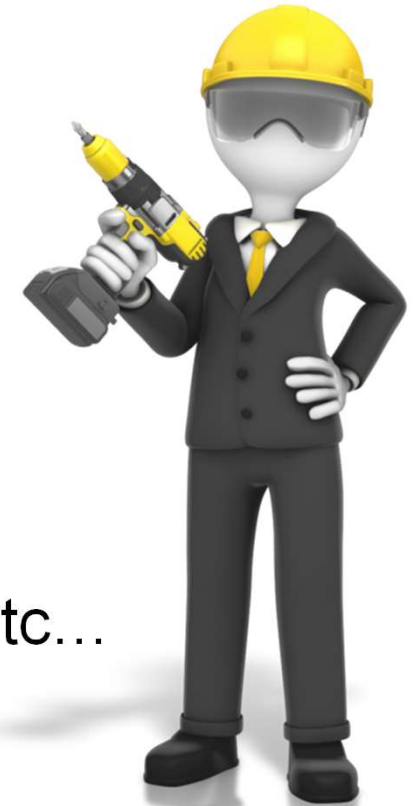




# Use Equipment / Tools

Many **different** tools & equipment are available to **support** Workers:

- 👤 **Lift Assists / Material Hoists**
- 👤 **Forklifts / Cranes**
- 👤 **Drills / Powered Screwdrivers**
- 👤 **Push/Pull Devices**
- 👤 **Powered Cleaning Equipment**
- 👤 **Automation / Robotics**
- 👤 **Pneumatic / Hydraulic Devices, etc...**



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# Fingers, Hand & Wrist

Excessive/repetitive **movement** of the fingers/hand/wrist can result in:

- ‡ **Soreness**
- ‡ **Numbness / Tingling**
- ‡ **Pain & Swelling**
- ‡ **Eventual joint damage**





# Back, Hips & Waist

Back injuries: **particularly Lower-Back**, are some of the most-common MSD injuries

These commonly **result** in:

- 👤 **Soreness**
- 👤 **Numbness / Tingling**
- 👤 **Lumbar Strain**
- 👤 **Weakness & Fatigue**
- 👤 **Eventual joint damage**

