



ERGONOMICS

TOOLBOX TALK: Ergonomics – Industrial, Power-Plant, and Office Environments

RATTLIR Safety Series – "Strike Before It Bites"

Purpose

Ergonomics is the science of fitting work to the worker. In power-generation, industrial, field, and office environments, poor ergonomics can lead to strains, sprains, overexertion, and long-term musculoskeletal injuries. This toolbox talk combines industrial lifting and posture guidance, power plant specific strain behaviors, and office ergonomics to help reduce fatigue, improve productivity, and prevent injury.

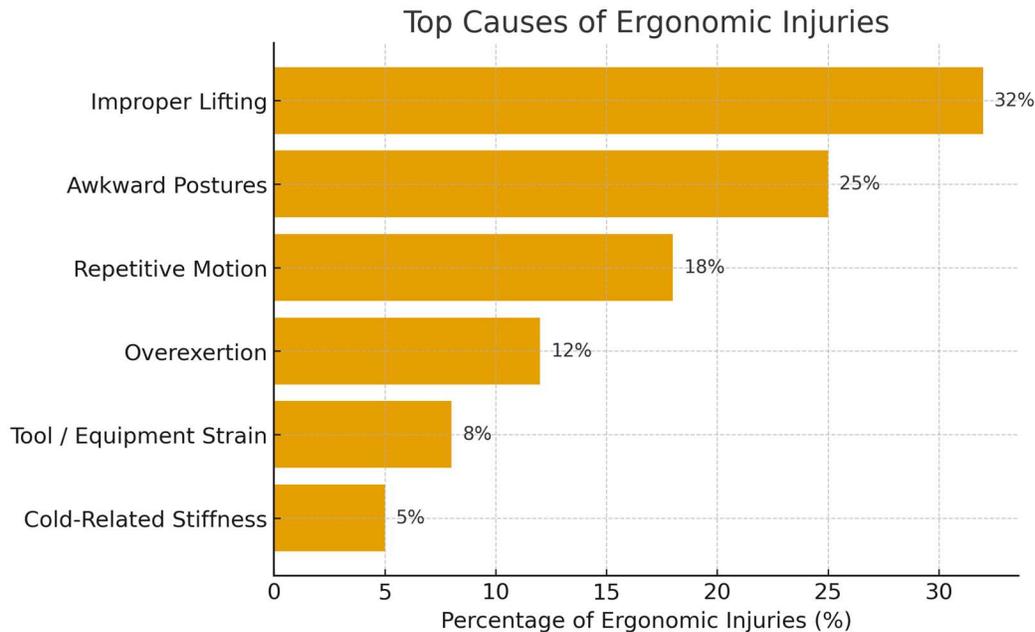


Figure 1 – Top Causes of Ergonomic Injuries

Industrial Ergonomics – Lifting, Carrying, and Manual Handling

Industrial tasks often involve lifting, carrying, pushing, and pulling materials that place strain on the body if not performed correctly:

- Use proper lifting techniques: keep loads close, maintain a neutral spine, and lift with the legs.
- Break heavy loads into smaller components when possible.



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- Push rather than pull whenever feasible – pushing uses stronger muscle groups.
- Avoid twisting while lifting or carrying; reposition your feet instead.
- Use carts, dollies, hoists, or team lifts for heavier items.

Power Plant Ergonomic Hazards

Power generation environments contain unique ergonomic strain risks due to equipment layout and access challenges:

- Valve manipulation requiring forceful turning, especially on older or poorly lubricated valves.
- Dragging fire hoses, water-wash hoses, or air hoses across long distances.
- Climbing HRSR structures, boilers, and turbine decks which requires repetitive steps and awkward postures.
- Working in tight spaces that require kneeling, crawling, or overhead work.
- Cold-weather conditions stiffening muscles and reducing flexibility, increasing strain risk.
- Avoid kneeling directly on grating or metal surfaces. Use kneeling pads, protective mats, or adjust posture to reduce contact pressure on the knees.
- Kneeling on grating creates concentrated pressure points, reduces stability, and increases the likelihood of strain, bruising, or long-term knee injuries.

Tool and Equipment Ergonomics

Hand tools, power tools, and mobile equipment can create strain if not used with proper technique and posture:

- Use tools that match the task – do not modify tools or use them beyond design limits.
- Choose tools with ergonomic grips that reduce wrist deviation and grip force.
- Reduce vibration exposure by rotating tasks and using anti-vibration gloves where appropriate.
- Ensure tools are properly maintained to prevent excessive force or awkward posture.

Office and Control Room Ergonomics

Even in office or control room environments, improper setup can cause long-term discomfort and repetitive stress injuries:

- Maintain monitor height at eye level with the top of the screen slightly below eye line.
- Keep keyboard and mouse at elbow height with forearms parallel to the floor.



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- Use chairs with proper lumbar support and sit with feet flat on the floor.
- Take micro-breaks every 30–45 minutes to stretch and reset posture.
- Avoid leaning forward or slouching – keep the spine neutral and supported.

Human-Performance Behaviors Affecting Ergonomics

Rushing, fatigue, and habit-driven behavior can lead workers to ignore proper ergonomic technique:

- Pause and evaluate the lift or task before beginning – use STAR (Stop-Think-Act-Review).
- Avoid rushing; most ergonomic injuries occur during hurried or repetitive tasks.
- Recognize early signs of fatigue or strain and adjust posture or take a brief break.
- Ask for help before attempting lifts or tasks near your physical limits.

Early Reporting and Injury Prevention

Early reporting of discomfort or strain helps prevent minor symptoms from developing into serious injuries:

- Report discomfort early to supervisors before pain becomes severe.
- Use stretching programs to warm up before physically demanding tasks.
- Adjust work methods, tools, or posture when strain is noticed.
- Document ergonomic concerns in operator rounds or shift turnover logs.

Discussion Questions

- Do you understand how proper lifting, posture, and tool selection reduce ergonomic injuries?
- Are you aware of the high-strain tasks in your work area today?
- Do you have the right equipment or assistance needed to perform tasks safely and ergonomically?

RATTLIR Takeaway

Ergonomics is about working smarter, not harder. Whether lifting equipment in the plant, operating valves, installing components, or working at a desk, the way your body moves determines your long-term health and safety. RATTLIR strikes before it bites by promoting proper posture, early reporting, deliberate movement, and the use of tools and techniques that prevent strain before it begins.