Ergonomics

Ergonomics is the blending of the workplace to the worker not the other way around.

ERGONOMICS Definition

- Ergonomics considers the match between the person, the equipment they use, the work processes and the work environment.
- Ergonomics principles are used to improve the "fit" between the worker and the workplace.
- A person's capabilities, physical attributes and work habits must be recognized to improve ergonomics factors in the workplace.
Theory & Outcomes

In the 1980's Stanley Bigos, MD evaluated 31,200 Boeing Company workers and identified that job dissatisfaction along with a previous history of MSDs were the two most significant predictive factors for employees reporting work related back injuries.

Do you know any of today's workers who are dissatisfied?

Athletic Activities are performed for a few hours!

Work Activities last for 8-12 hours or more!
Labor Force OVER the Age of 40

Our Aging Workforce

- In 1972 the average age of a US worker was 28.
- In 2012 the average age of a US worker was 46.
- Currently 26.2 million workers are 52 or older.
- In 2010, 50% of workforce over 40.
- In 2016 33% of workforce will be over 50 years old.

Why are we seeing more Soft Tissue Injuries?

- Poor Physical Fitness Levels
- Older Workforce
- Increased Work Load
- More Physical Fatigue
- More Mental Fatigue
- Better Educated on MSDs
- Static Work & Home Postures
- One Size Fits All - Job, Home & Recreational Activities
According to the Bureau of Labor Statistics, musculoskeletal disorders, commonly described as ergonomic injuries, accounted for 33% of all workplace injuries and illnesses requiring days away from work in 2011. In addition, the industries with the highest MSD* rates include health care, transportation and warehousing, retail and wholesale trade and construction.

- 24% of all injuries over all occupations involves the Low Back
- Healthcare workers are 4.5 times more likely to injure the low back than others
- Nurses annually have 40.50% incidence
- Lifetime 35.80% chance depending on the research
- 1/3 with low back injuries do not return
Back Belts reduce injuries
It is safe to lift a 200 lb patient
Mechanical lifts are not affordable
Staff will not use equipment for lifting

What are the Primary Risk Factors for Ergonomics Injuries?
- Posture – awkward, static positions
- Force – grip, pinch, push/pull
- Repetition – frequency & speed over time
- Contact Stress – focused sustained or suddenly applied with compressive force
- Vibration – segmental or whole body over time, frequency and amplitude
Employers are responsible for providing a safe and healthful workplace for their workers. In the workplace, the number and severity of MSDs resulting from physical overexertion, as well as their associated costs, can be substantially reduced by applying ergonomic principals.

Implementing an ergonomic process has been shown to be effective in reducing the risk of developing MSDs.

Important Elements of an Ergonomic Process

- Provide Management Support
- Involve Workers
- Provide Training
- Identify Problems
- Encourage Early Reporting of MSD Symptoms
- Implement Solutions to Control Hazards
- Evaluate Progress

Health care facilities especially nursing homes have been identified as an environment where ergonomic stressors exist.

Possible Solutions

- OSHA recommends minimizing manual lifting of patients/residents in all cases and eliminating lifting when possible.
- OSHA recommends that employers identify and address ergonomic stressors in their facility's safety and health plan. General safety and health plan information can be found in the Administration - Safety and Health Program.
Areas that should be addressed in a facility’s safety and health program include:

- Management Leadership/Employee Participation
- Workplace Analysis
- Accident and Record Analysis
- Hazard Prevention and Control
- Medical Management
- Training

Management Leadership/Employee Participation:

- Management Leadership should demonstrate a commitment to reduce or eliminate patient/resident handling hazards through establishing a written program that addresses issues, such as:
  - Continued training of employees in injury prevention.
  - Methods of transfer and lifting to be used by all staff.
  - Procedures for reporting early signs and symptoms of back pain and other musculoskeletal injuries.

- Employee Participation should include:
  - Compliance/suggestion program which includes employee reports of unsafe working conditions.
  - Prompt reporting of signs and symptoms as well as injuries.

Workplace Analysis & Accident and Record Analysis:

- Workplace Analysis: To identify existing and potential workplace hazards and find ways to correct these hazards. Assessment of work tasks involves an examination of duration, frequency, and magnitude of exposure to ergonomic stressors such as force, repetition, awkward postures, vibration and contact stress to determine if employees are at risk of pain or injury. Observation, workplace walkthroughs, talking with employees and periodic screening surveys are used to help identify hazards such as stressful tasks.

- Accident and Record Analysis: Records of injuries and illnesses should be analyzed to identify patterns of injury that occur over time, enabling the hazards to be addressed and prevented. This includes reviewing OSHA 300 logs, OSHA 301 forms and Workers’ Compensation reports.
Hazard Prevention and Control

Medical Management

* Hazard Prevention and Control: including implementing administrative and engineering controls.
  - Administrative controls: Provide for adequate staffing, assessment of patient/resident needs, and restricted admittance policies.
  - Engineering controls: Help to isolate or remove the hazards from the workplace, for example providing proper selection, training, and use of assist devices or equipment (see Patient Handling Controls section).
  *Medical Management*: A medical management program, supervised by a person trained in the prevention of musculoskeletal disorders, should be in place to manage the care of those injured. The program should:
    - Accurate injury and illness recording.
    - Early identification and treatment of injured employees.
    - Light duty or "no lifting" work restrictions during recovery periods.
    - Systematic monitoring of injured employees to identify when they are ready to return to regular duty.

Training

* A training program, designed and implemented by qualified persons, should be in place to provide continual education and training about ergonomic hazards and controls to managers, supervisors and all healthcare providers, including "new employee" orientation. Training should be updated and presented to employees as changes occur at the workplace, and be at a level of understanding appropriate for those individuals being trained, and should also include:

  - The opportunity to ask questions of the trainer.
  - An overview of the potential risks, causes, and symptoms of back injury and other injuries. Be able to identify existing ergonomic hazards and methods of control, such as the use of engineering, administrative, and work practice controls particularly safe resident handling techniques.
  - Recognition of the signs and symptoms of MSDs and the procedures for reporting potential problems.
  - Encouragement of staff physical fitness.

Training Continued

- Lifting guidelines for health care workers (nurse assistants, licensed practical nurses, registered nurses) which should include:
  - Never transfer patients/residents when off balance.
  - Lift loads close to the body.
  - Never lift alone, particularly when patients/residents are in pain or have back problems.
  - Limit the number of allowed lifts per worker per day.
  - Avoid heavy lifting especially with spine rotated.
  - Training in when and how to use mechanical assistance.
* Analyze tasks performed (movements, weights, duration, etc.) to identify muscle groups and joints at greatest risk first.

* Write and use functional job descriptions for use in hiring/placement.

  Functional Task Analysis:
  - Define Critical & Essential functions of the job.
  - Postures (Repetitive, Static)
  - Movements (Frequency, Duration)
  - Weights (Lifts, Push / Pull)
  - Work Environment
  - Schedule
  - Certifications

* Have potential employee checked for functional capacity (can they perform the essential functions of the job?). (POETS)

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**Steps in Preventing Work Strains & Sprains**

**Post Offer Employment Testing (POETs)**


- Employers have a right to:
  - Screen applicants
  - Ensure capability
  - Ask medically related questions
  - Withdraw employment offers

  **As long as the testing is based on the critical and essential functions of the job**

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**Steps in Preventing Work Strains & Sprains**

**Post Offer Employment Testing (POETs)**

* Performed after a conditional job offer is extended.
* Performed on all new hires to that job description.
* Cannot selectively apply tests.
* May be applied to internal transfers and temporary employees as well.
Steps in Preventing Work Strains & Sprains

* Take steps to eliminate or reduce inherent/high risk exposures through:
  - Work/Task Design Changes
  - Providing Mechanical Interventions (carts, lifts, etc.)
  - Train Employees in Preventative Measures

* Individuals performing work tasks should:
  - Receive instruction in safe (bio-mechanical) task execution.
  - Have muscle groups/joints prepared for work activity.

Steps in Implementing Workplace Warmup/Exercise Program

* Identify the muscle groups/joints of highest risk first.
* Review injury history for trends (back, shoulders, etc.).
  - Evaluate work tasks for greatest injury potential, i.e., Heavy Weights, High Repetitions, Lifting, Carrying, Pulling, Pushing, Extended Reaches, etc.

* Develop a conditioning routine including:
  - General, whole-body warm up.
  - Specific higher risk muscle/joint area warm ups and stretches.
  - Survey employees for needed modifications of the conditioning routines (individual employees' physicians or therapists may offer appropriate alternative warm ups or stretches).
  - Assign groups/group leaders and instruct leaders in proper conditioning routines, techniques, times of sessions, etc.

Education

* Educating & training your employees on proper body mechanics and postures has been proven to reduce and prevent musculoskeletal injuries.
Proper Body Mechanics

- Standing 100% of Body Weight
- Sitting 200% of Body Weight
- Lying Down with Knee Higher than Hips 25% of Body Weight
- Bending 20 degrees 200% of Body Weight
- Bending 20% and Twisting 10 x Body Weight

Functions of the Spine

- Support
- Protection
- Shock Absorption
  - Structure/Muscles/Disc

Strain vs. Sprain

Disc Pressures
Disc Pressures

- Lifting 10# Close to the Body
  - The weight on the lower back increases by 10#

- Lifting 10# Away from the Body
  - The weight on the lower back increases by 10 x the weight of the object or 100#

Basic Principles of Body Mechanics

- Keep the Object close
  - This affects the arms and legs as well the spine
### Basic Principles of Body Mechanics

- Bend with your legs not from your back
- Turn with your body rather than twist

### Basic Principles of Body Mechanics

- Balance
  - Feet should be apart
  - Is the surface safe?

### Basic Principles of Body Mechanics

- Plan the Lift
  - Use equipment when available
  - Don’t be hesitant to ask for help
Basic Principles of Body Mechanics

- Use the Best Muscles
  - Push instead of Pull
- Use Your Best Postures

Questions???