

Safety Educational Webinar Series – Soft Tissue Injury Prevention

**Industrial Ergonomics:
What Is It and Why
Should It
Concern Me?**



Why We Are Here!?!?

- Routine work can dull alertness and create a relaxed attitude.
- In many jobs the same tasks are repeated with little thought.
- We may not recognize the importance for safety because we have been doing the same task for years.

Overview

- Without some periodic reawakening to the ever-present hazards around us, lethargy deepens and the odds of an accident occurring increases.



What Is A Soft Tissue Injury?

- Damage to the muscles, ligaments and tendons.
- One off or overuse.
- Swelling, bruising and loss of function.



SMT INJURY TYPE: SPRAIN & STRAIN CLAIMS*

1/1/2020 – 12/31/2023

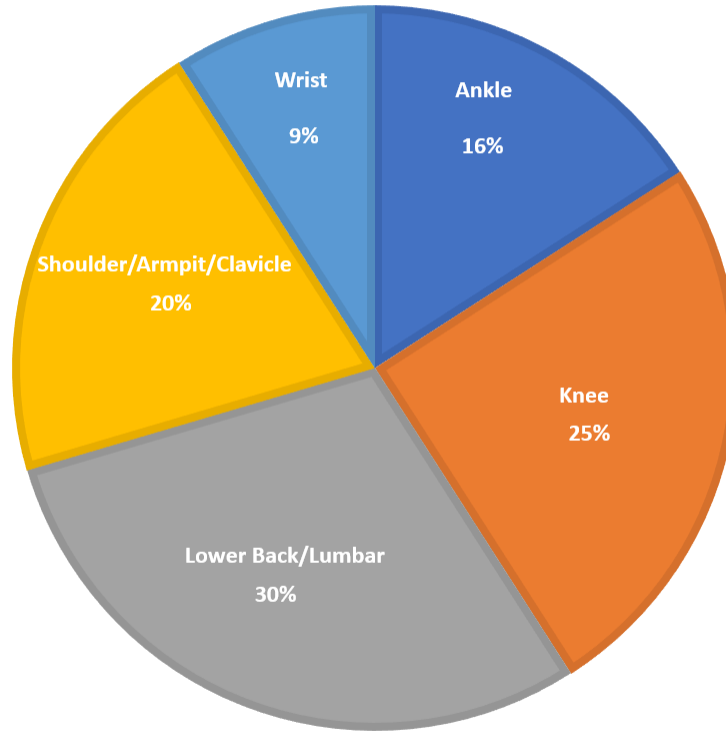
- Total number of all claims: 1,078
- Number of Sprain & Strain claims: 393
- Total \$ amount of all claims: \$11,149,287
- Total \$ amount of Sprain & Strain claims: \$6,852,010

THUS...Sprain & Strain injury claims comprise:

- **One-third** of all claims by number
- **Two-thirds** of all claims by \$ amount

**Does not include zero-dollar (report-only) claims*

**SPRAIN & STRAIN CLAIMS – TOP 5 BODY PARTS INJURED BY FREQUENCY:
1/1/2020 – 12/31/23**



Soft Tissue Injuries = Frustration

- Aging workforces.
- Doing more with less!!
- Stymied by these injuries.

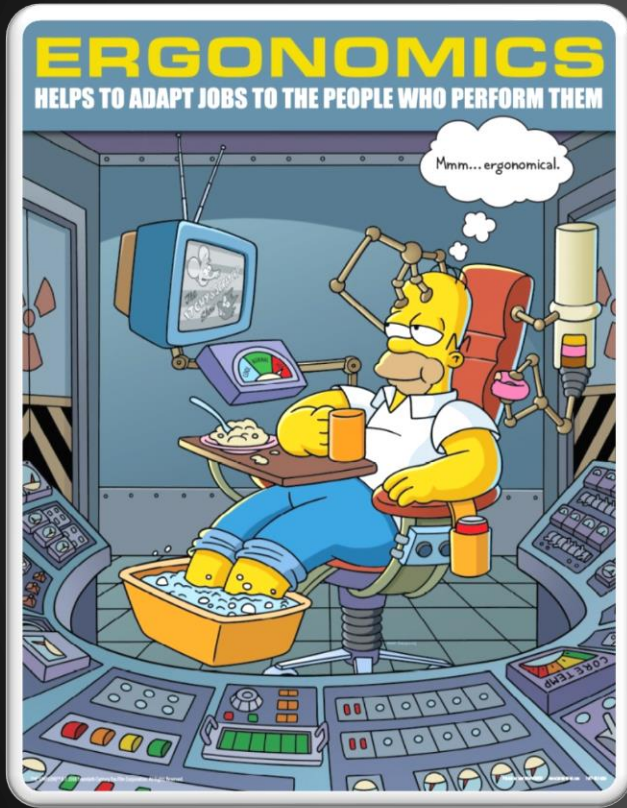


Ergonomics is...

The science of fitting the job to the worker

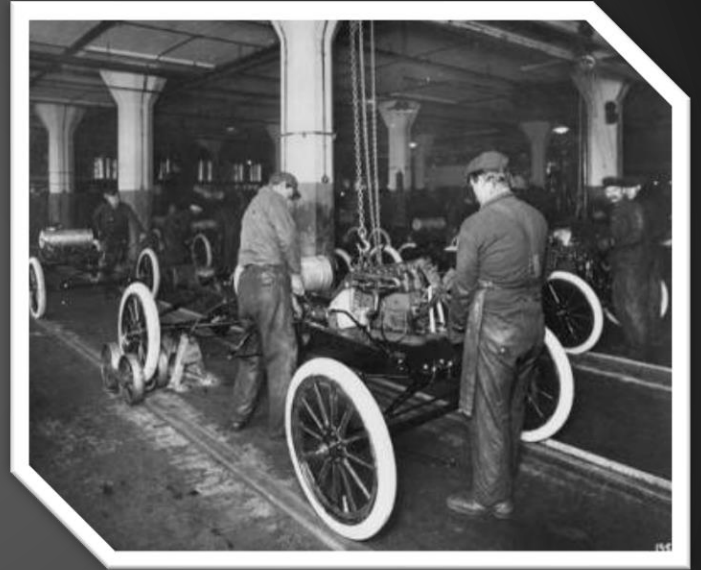
- Includes designing equipment and adapting work tasks to the capability of the worker
- Proactive approach to prevent injuries

– *A mismatch between the physical requirements of the job and the physical capability of the worker can result in work-related injuries*



History of Ergonomics

- Industrial Revolution
 - Steel industry (shovels)
- Henry Ford
 - Assembly line design
- Frank and Lillian Gilbreth
 - Micro-motion studies (i.e. today's surgical techniques)



History of Ergonomics

- World Wars
 - Aircraft, weapon design
- Cold War
 - Nuclear power plants
- Today
 - Industry, hospitals, offices, product design



Ergonomics Overview

- Reducing stress and injuries to employees from the following:
 - Awkward postures
 - Over-reaching
 - Repetitive motion
 - Forceful exertion
 - Vibration



Common Symptoms Of WMSD's

- Tingling or numbness;
- Soreness or discomfort;
- Joint swelling or stiffness; and
- General fatigue, eye strain, and headaches.





Muscle Sprains, Strains, or Tears

- Contrary to popular belief, muscle strains and pulls are not always the result of lifting heavy objects.
- Lifting objects from below the knee or above the shoulder, as well as twisting while lifting, can increase the chance of a back injury by 400 – 500%..



Carpal tunnel syndrome occurs when the median nerve, which runs from the forearm into the palm of the hand, becomes pressed or squeezed at the wrist.



Tendinitis is the inflammation or irritation of a tendon. Some common names for tendinitis include tennis elbow or pitcher's shoulder.

Raynaud's syndrome is a disease that develops from prolonged exposure to vibration. Symptoms include tingling, numbness, and cold, white fingers or hands due to reduced blood flow.



Awkward Postures

- Awkward postures are when your body is out of neutral alignment. They include twisting, reaching, and tilting limbs at unnatural angles.
- The longer awkward postures are held, the more muscles and tendons are vulnerable to strain.





Frequent or Heavy Lifting

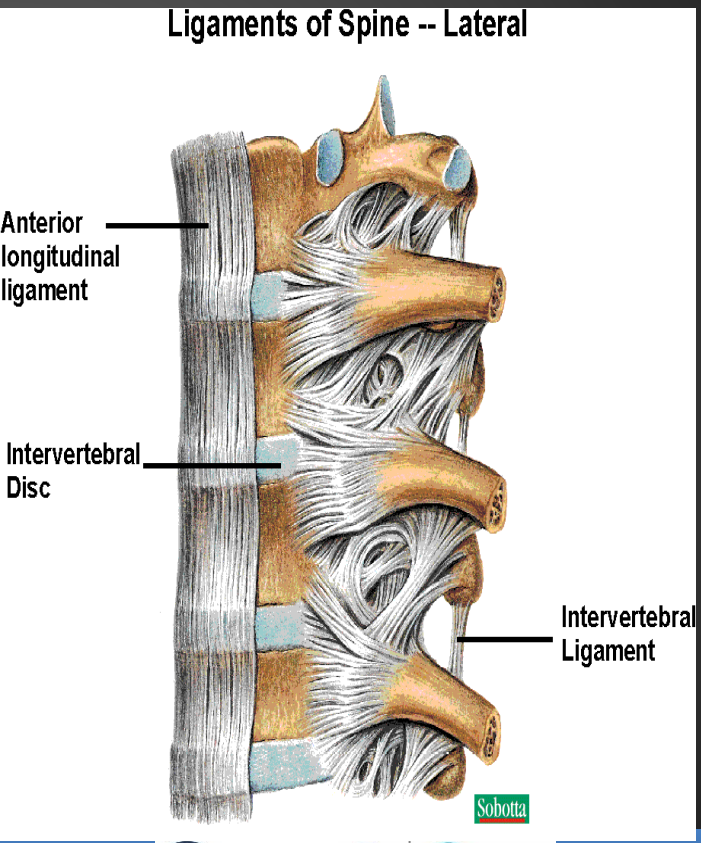
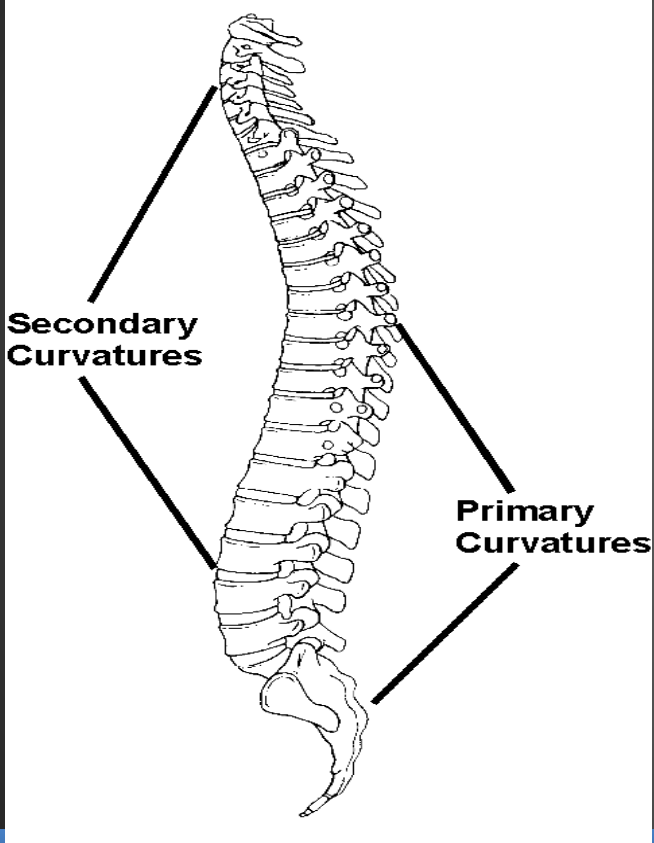
When poor or improper form is used when engaging in lifts, particularly frequent or heavy lifts, individuals can suffer injuries to their back, knees, shoulders, or any other parts of their body.

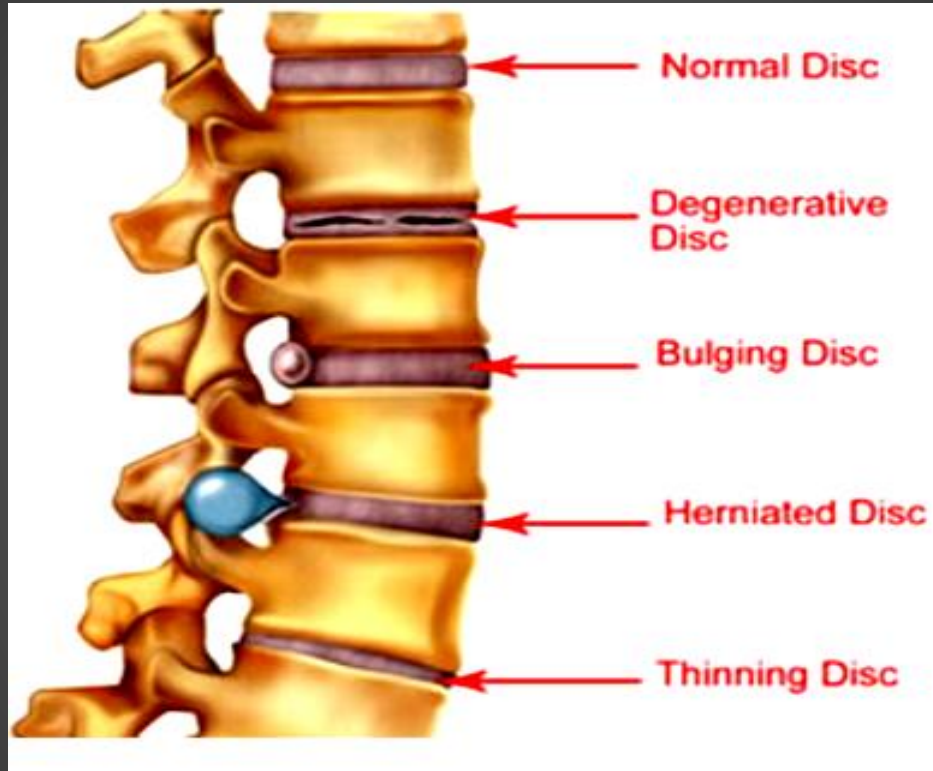
Back Injury Statics

- 80% of Americans will have a back injury that requires medical attention
- Back injuries are the second most common cause of lost work time, next to the common cold
- Back injuries occur more often at home than they do at work
- Injured backs are often subject to re-injury
- In addition to missed work, there may be a lifetime of pain



Back Parts





Safe Lifting Techniques

UVSAR.COM
Supporting Higher Standards

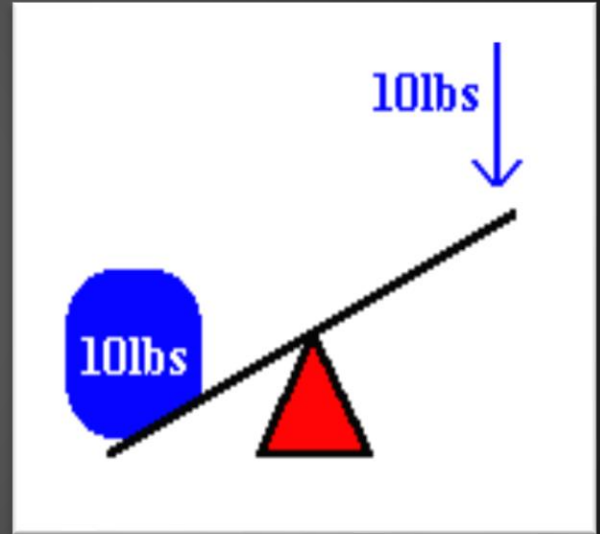
Five Leading Back Injury Risk Factors

1. Poor Posture
2. Lack of Conditioning
3. Obesity



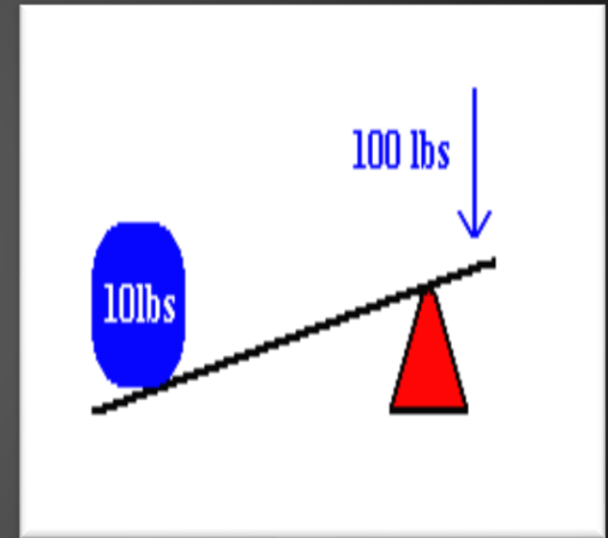
The Forces Involved

- The amount of force you place on your back in lifting may surprise you!
- Think of your back as a lever.
- With the fulcrum in the center, it only takes ten pounds of pressure to lift a ten-pound object.



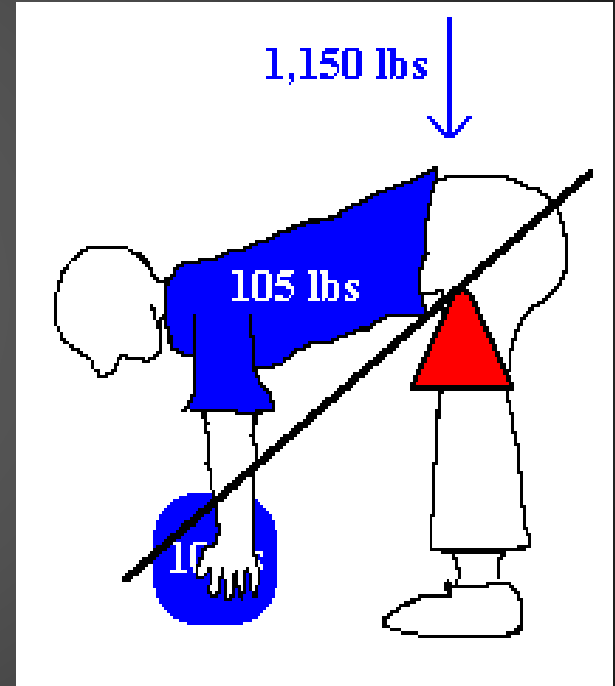
The Forces Involved

- If you shift the fulcrum to one side, it takes much more force to lift the same object.
- Your waist acts like the fulcrum in a lever system, on a 10:1 ratio.
- Lifting a ten-pound object puts 100 pounds of pressure on your lower back.



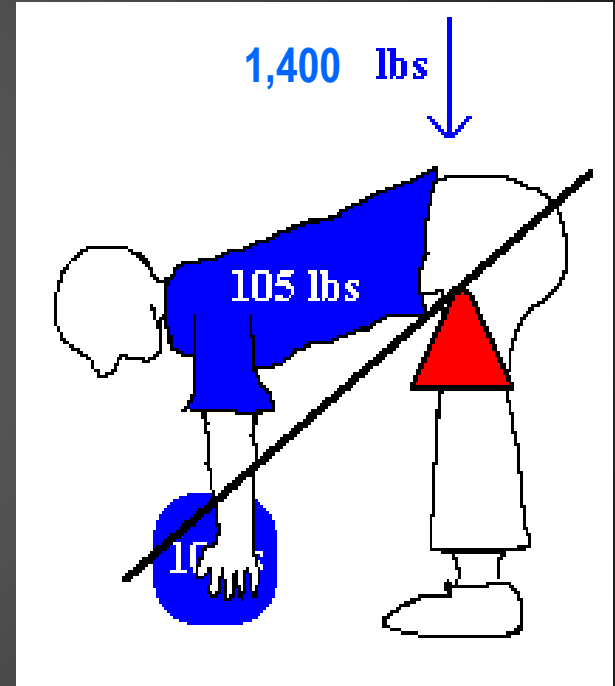
The Forces Involved

- When you add in the 105 pounds of the average human upper torso, you see that lifting a ten-pound object puts 1,150 pounds of pressure on the lower back.



The Forces Involved

- If you were 25 pounds overweight, it would add an additional 250 pounds of pressure on your back every time you bend over.



Five Leading Back Injury Risk Factors

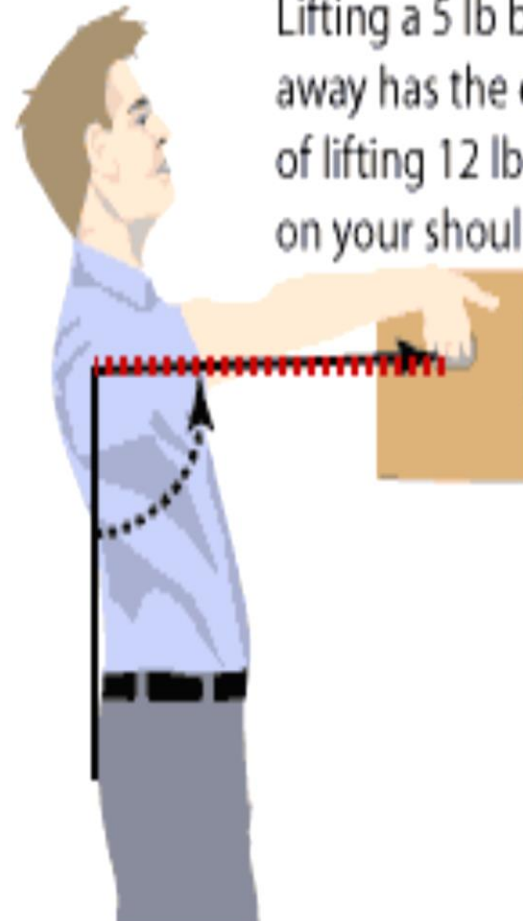
1. Poor Posture
2. Lack of Conditioning
3. Obesity
4. Failure to Use Mechanical Lifting Aids
5. Rushing to Lift



Lifting a 5 lb box up and away from the body has the effect of lifting 5 lbs.



Lifting a 5 lb box away has the effect of lifting 12 lbs on your shoulder



Static Positions

Static positions are when the body is still for a long period of time. This can be taxing on joints and muscles.

If static positions are combined with awkward postures the risk for damage greatly increases. This is also known as “hidden lifting.”



Repetitive Motion

Repeating the same movements over and over can lead to strain injuries in the joints and muscles, which in turn can affect other nearby structures, such as nerves and blood vessels.



Excessive Vibration

The effects of vibration, which include numbness and pain, depend on the length of exposure, the vibration level, and the range of the vibration.



Excessive Force

When using excessive force, your body requires more time to fully recover from each movement.

Frequently-repeated forceful movements may not allow full recovery and can increase the chance of injury, such as muscle strains and damage.





Crouching and Kneeling

Tasks performed in a crouching or kneeling position can lead to reduced blood flow to the lower legs, as well as knee damage due to contact with hard surfaces or from repeatedly moving from a standing position to a kneel or crouch and back again.

Contact Trauma

Contact with hard surfaces and sharp edges could be caused by a variety of situations





Contact Trauma

The three points of contact rule will give you the most stability every time you enter and exit your truck.



Extreme Temperatures

A work area's temperature can affect an employee's ability to maintain the ergonomic and mental focus needed to safely complete tasks.

- Cold environments
- Hot environments

Problem Solving

- What are some ways to prevent strains, sprains, and Musculoskeletal Disorders (MSDs)?
 - Better materials;
 - **Better tools;**
 - Improved work methods;
 - Better work organization;
 - Training;
 - Personal protective equipment (PPE);
 - Stretch and flex



Ergonomic Tools



Ergonomic Tools



Go Bags

Traditional Bag



5.11 Push Bag

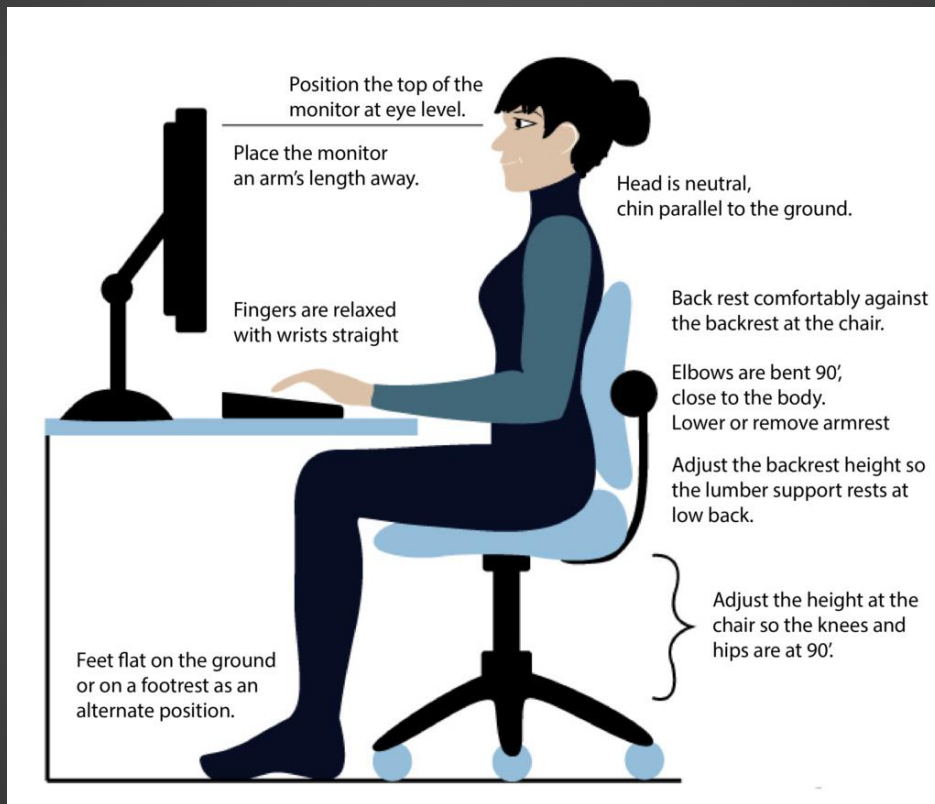


Problem Solving

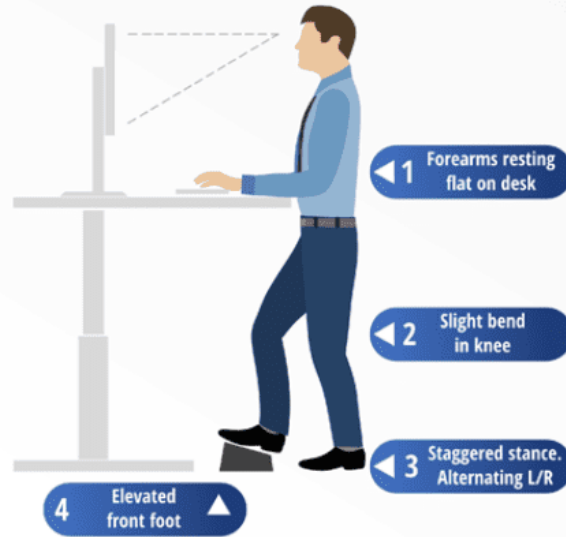
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A Word About Organization . . .



How to stand at your sit-stand desk



A Word About Organization . . .

Epic Fail!!!

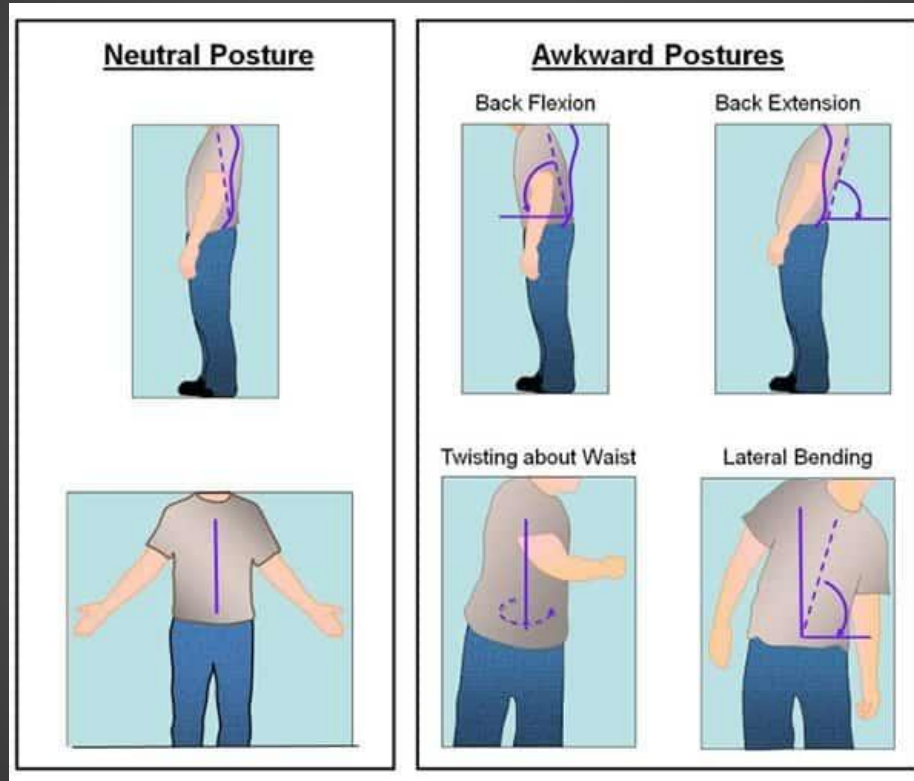


Problem Solving

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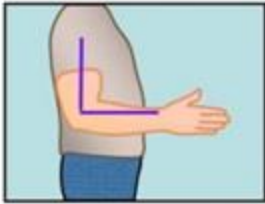


A Word About Posture



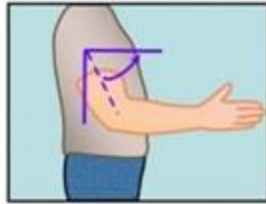
A Word About Posture

Neutral Posture

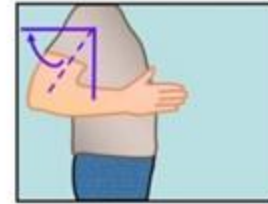


Awkward Postures

Shoulder Flexion



Shoulder Extension



Shoulder Abduction



Shoulder Abduction & Extension



Problem Solving

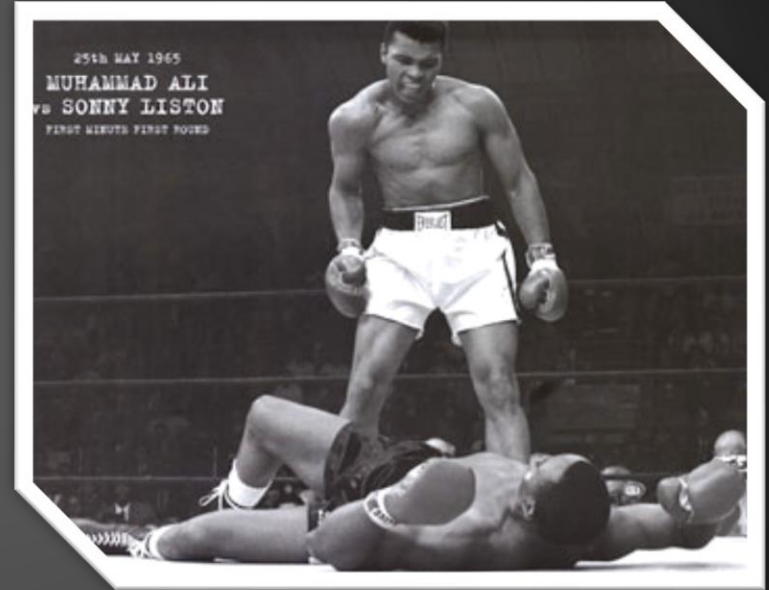
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 - Training;
 - Personal protective equipment (PPE);
 - **Stretch and flex**



Occupational Athlete vs. Pro Athlete



Occupational Athlete's Routine?



Pro Athlete's Routine?

Pre-Shift Stretch

- Prepares the Body For Physical Work
- Increases Flexibility
- Enhances Body Mechanics
- Creates Body Awareness
- Reduces Risk of Injury
- Reduces Stress & Tension



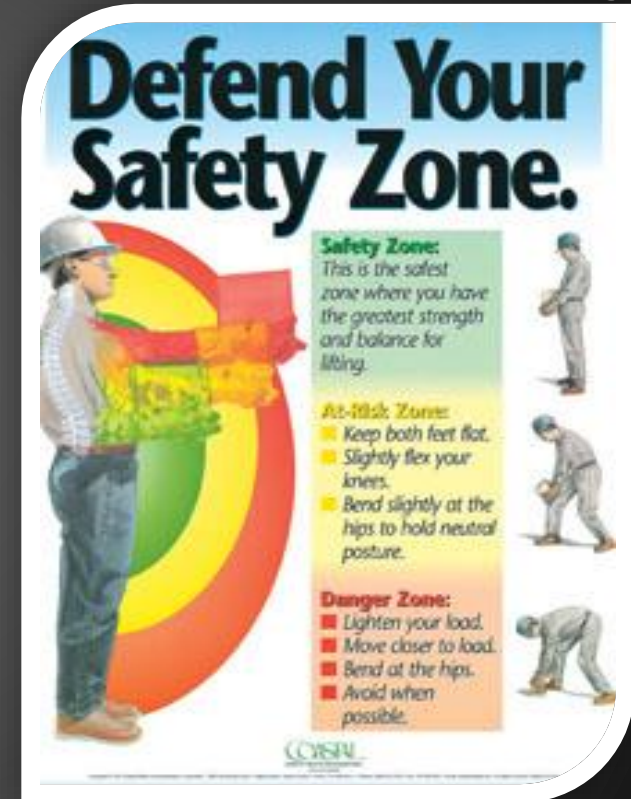
Prevention – Flexibility

- The rubber band theory
 - Frozen vs. room temperature
- Loose and limber =
 - less likely for injury
- See your doctor for exercises



Summary

- These principles should make it clear that we need to lift with our head before we lift with our back.
- Taking a couple of seconds to help ensure our safety and health is time well spent.



Safety Has Its Benefits

- Employers that invest in workplace safety can expect to reduce injuries, and illnesses.
- This will result in cost savings in a variety of areas, such as lowering workers' compensation costs and medical expenses.
- Happier and healthier employees!



Change

- Change can be difficult!
- Dr. W. Edwards Deming said “ It is not necessary to change, Survival is not mandatory”



Questions, Comments or Concerns?

