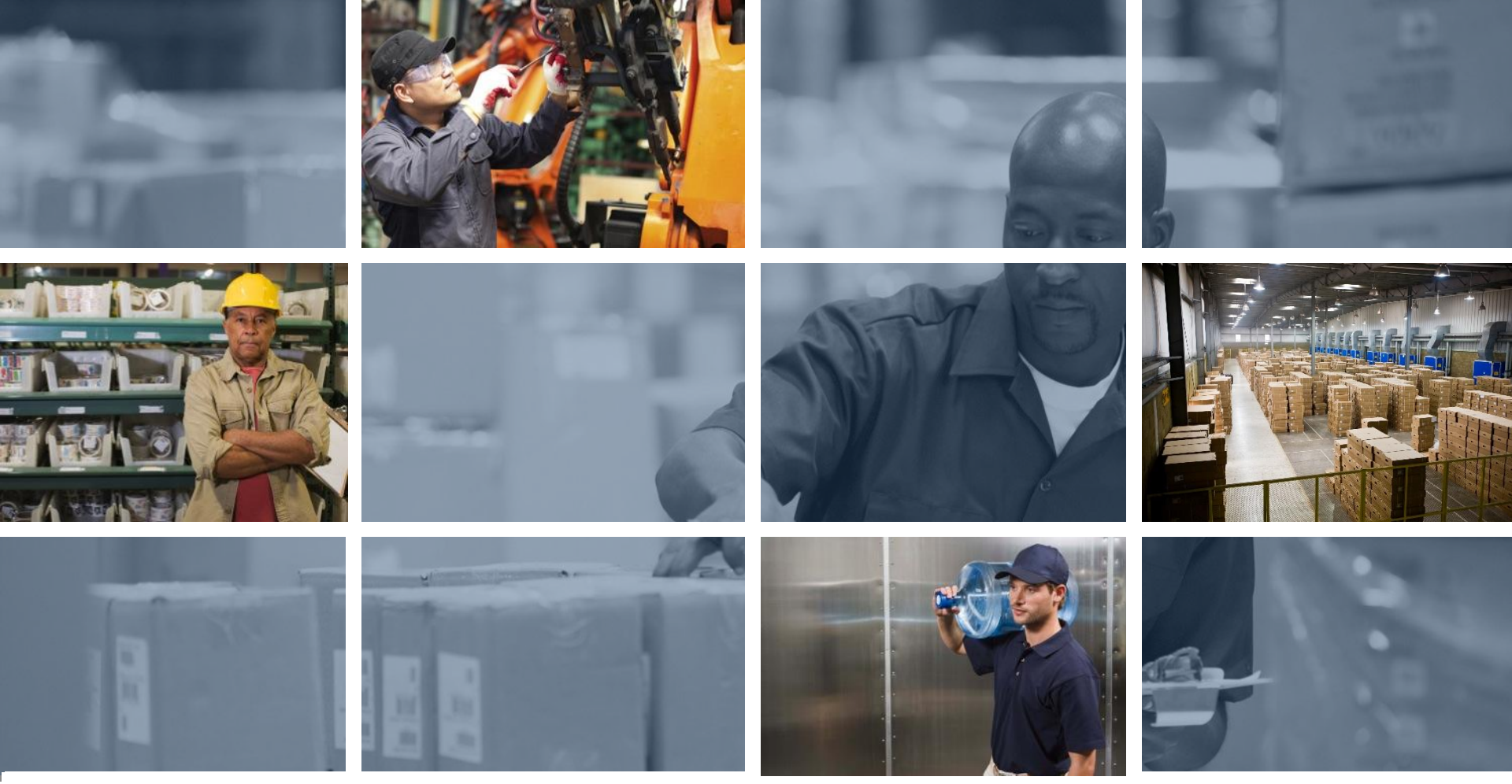


INJURY PREVENTION – TAKING CARE OF YOUR MOST VALUABLE ASSET – YOU!

FIT for WORK

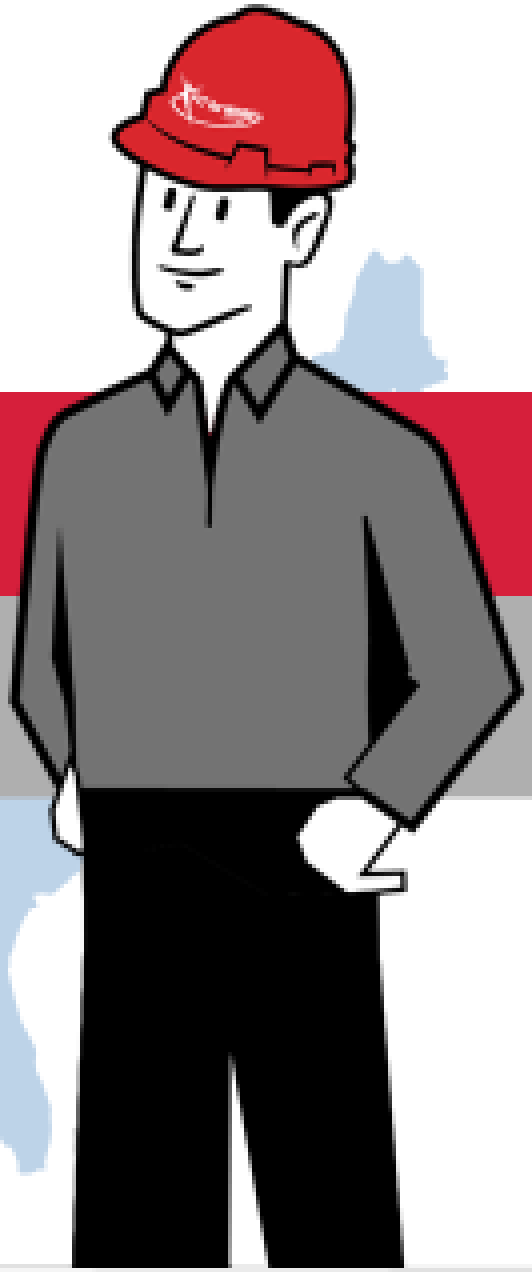
Objectives

- FFW Introduction – Who we are
- What are WRMSD's
- Intro to Ergonomic Risk Factors
- How to **Prevent** injuries
  - Job Coaching
  - Implement a Warm-Up
  - Develop an "Ergonomic Eye"
  - The Pain Experience
  - Engagement

PREVENT EMPLOYEES FROM BECOMING PATIENTS

OUR NUMBER 1 GOAL

WHO WE ARE



Highly trained ATCs, PTs and OTs

who are uniquely focused on injury prevention

Local providers in a national network

for job sites of any size, anywhere

We cut work injuries and their costs IN HALF

OUR CLIENTS


SHELL POINT
RETIREMENT COMMUNITY


Cargill


Frito Lay


SAFEWAY


GE


Andersen
Come home to Andersen.


Advanced
Disposal


Holland


Mack


ConEdison


REPUBLIC NATIONAL
DISTRIBUTING COMPANY OF KENTUCKY


VOLVO


WM
WASTE MANAGEMENT


CRH

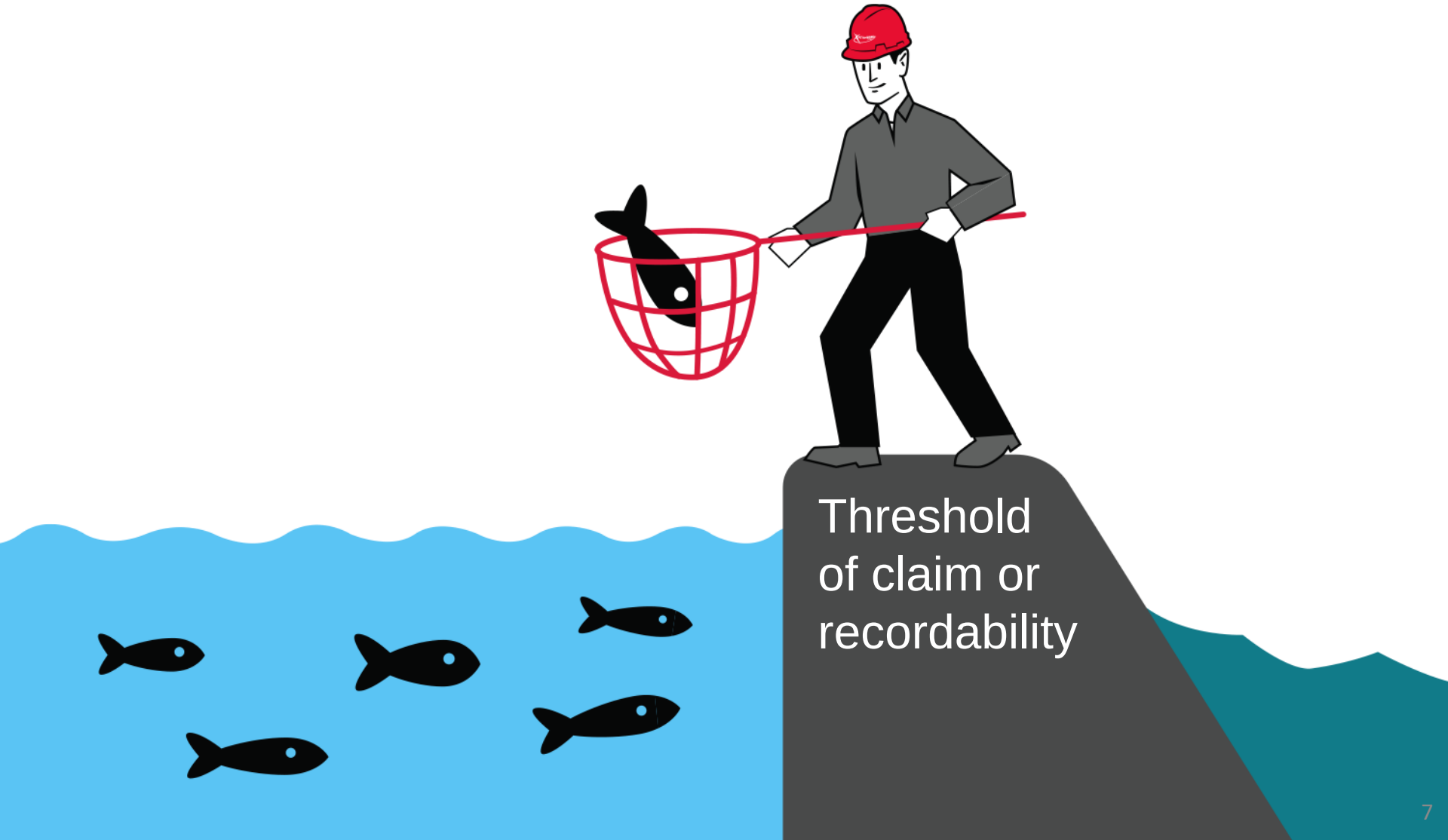

US.
FOODS


H-E-B


E.A. Sween Company
CDC

OUR PHILOSOPHY

Catch symptoms BEFORE they become injuries.



OUR PHILOSOPHY

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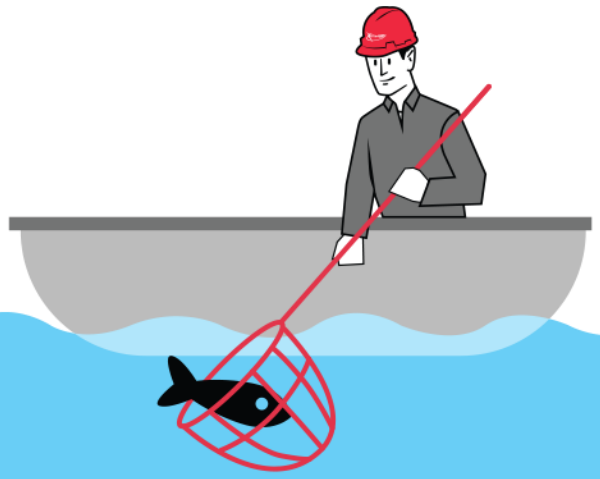
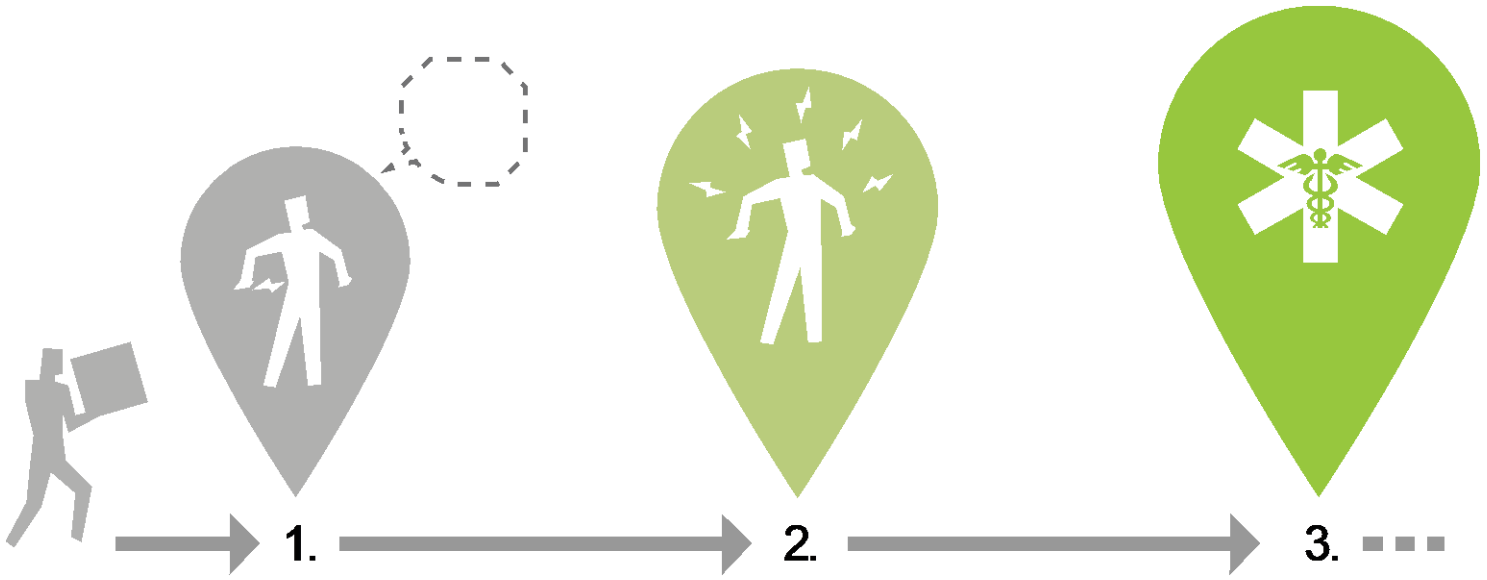


Threshold of claim or recordability

THE STORY OF A SYMPTOM

Typical Progression from Symptom to Medical Problem

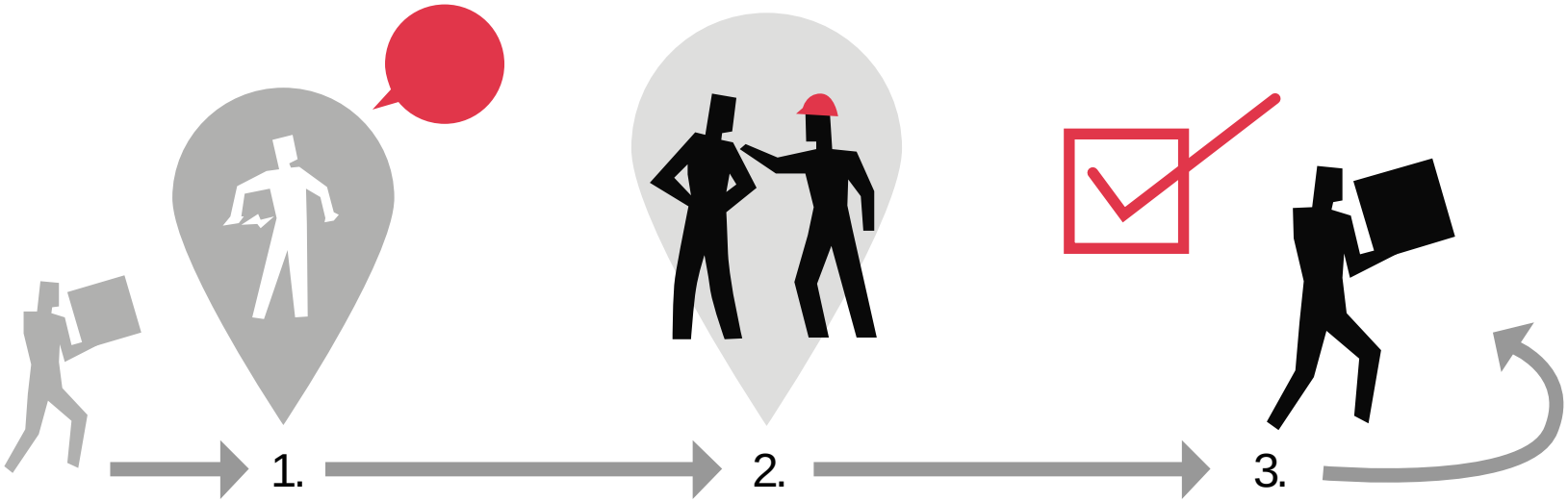


An employee has a symptom, but they don't tell anyone and continue to work

Symptom progresses, employee finally reports to supervisor

Employee sent to clinic or ER — resulting in a large claim

WITH FIT FOR WORK



An Employee visits
Fit For Work
(or is intervened by FFW
even before that)

Fit For Work
Addresses Symptom

Employee immediately
RETURNS TO WORK...
no medical problem develops

EARLY INTERVENTION: CASE STUDY

An Employee Visits Fit For Work

Employee describes low back soreness, wrist & shoulder discomfort

Onsite Specialist Provides First Aid / Early Intervention:

- Evidence-based musculoskeletal examination
- OSHA First Aid for symptoms – massage, ice, etc.
- Job coaching and ergonomic consultation

EARLY INTERVENTION: CASE STUDY

The Problem

Observation: Burger Stacking Station creating ergonomic problems (Bad Behaviors)

- Stacking to much product in one hand
- Overreaching and reaching to one side
- Conveyor height and width of conveyor created awkward angles

What are WRMSDs?

Work Related Musculoskeletal Disorders

- Injuries to muscles, tendons, ligaments, joints and nerves
- Occur from physically demanding and repetitive jobs
- Occur from poor behaviors & poor ergonomics

WRMSD Continued

Acute

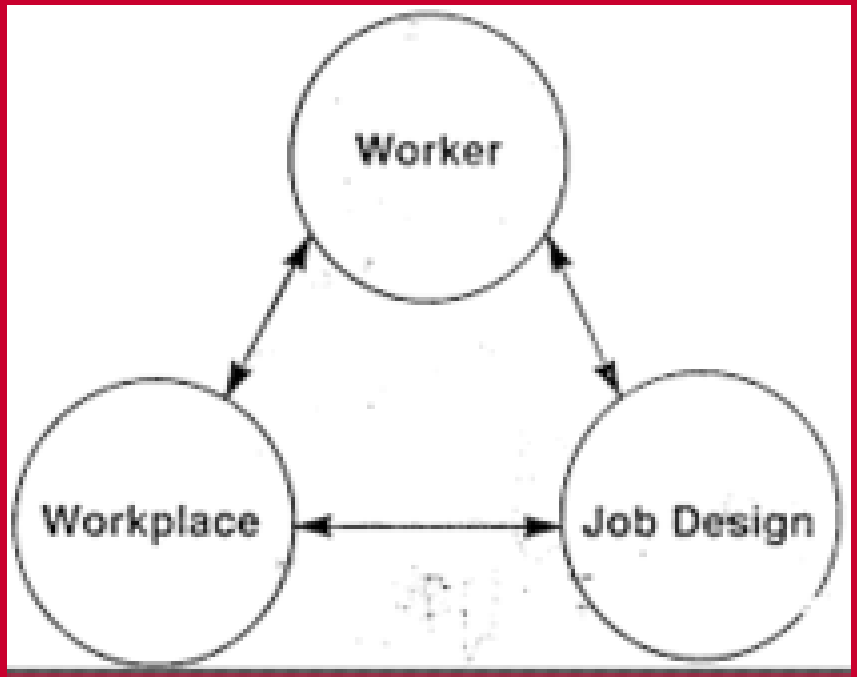
Sudden injury from a traumatic event

Cumullative/Chronic

Injury which occurs overtime

What is Ergonomics?

- The study of work and proper body movement to prevent and correct posture problems, reduce stress and enhance physical capabilities.
- The discipline that matches the job to the worker



NIOSH Ergonomic Risk Factors

Excessive Force

Awkward/Static Posture

Repetitive Motions

Contact Stress

Vibration

Personal Factors

Excessive Force

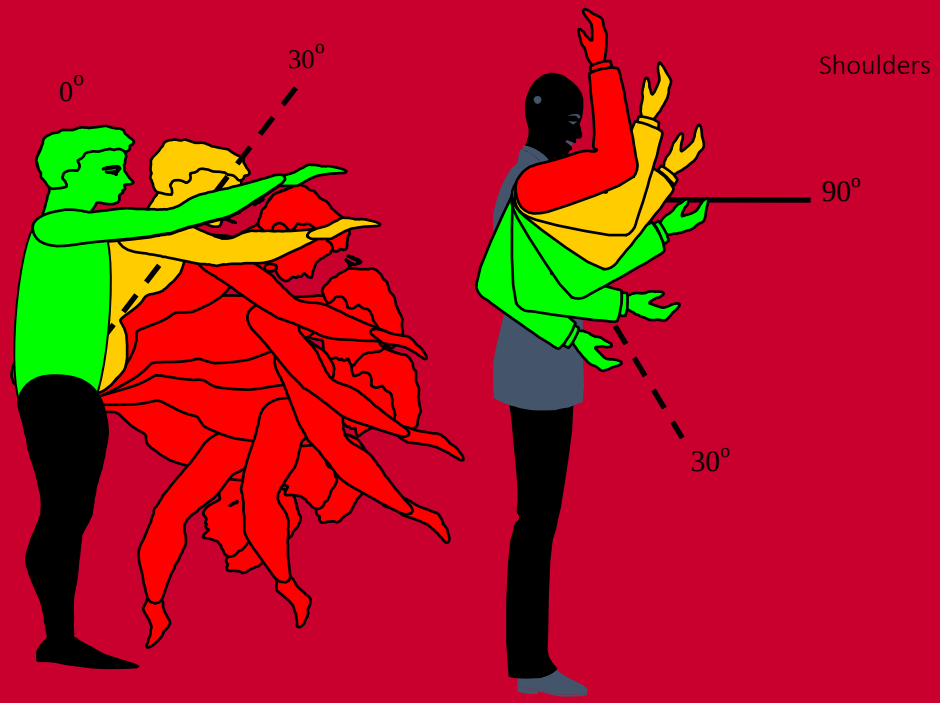
- Producing Excessive Force to complete a task
  - Lifting
  - Pushing
  - Pulling
- Excessive Force is NOT determined by weight
  - Poor Behaviors
  - Poor Ergonomics

Excessive Force

- Force injuries most commonly include lumbar injuries, rotator cuff tears, & biceps tears
- Risk of sustaining a force injury increase with:
  - Heavy weight
  - Frequency of forceful lifts/push/pull
  - Duration of forceful lifts/push/pull
  - Behaviors/Ergonomics

Awkward Postures

Any position, which deviates from a neutral position:



Awkward Posture injuries include:

- Sciatica
- Lumbar Strains
- Cervical Pathologies
- Chronic Shoulder Pathologies

Awkward Postures

Static Postures

- Static postures or “static loading” refer to physical exertion in which the same posture or position is held for an extended period of time
- Lack of movement decreases blood flow which leads to fatigue and decreased metabolism
- Examples:
  - Gripping tools that can’t be put down
  - Standing/Sitting for long periods of time
  - Holding arms up or away from body to perform task

Repetitive Motions

- Repeating the same motions every few seconds or repeating a cycle of motions frequently
- Activities include using hand tools, driving, typing, stepping up and down off of trucks, operating controls of heavy equipment

Contact Stress

- Localized pressure into a body part
  - Elbow on center console
  - Using hand as a hammer
  - Resting arms on edge of desk
- Contact stress injuries include:
  - Bursitis
  - Nerve compression disorders
  - Increased muscle fatigue

Vibration

Hand-Arm Vibration (HAV)

- Operation of power tools
  - i.e. Impact Guns/Drills
- Injuries to blood vessels and nerves to the upper extremity
- Injury risk increases with the higher the force of the tool

Whole-Body Vibration (WBV)

- Associated with sitting or standing on a vibrating surface in vehicle
  - i.e. Heavy Equipment, Trucks
- Injuries to the back
- Injury risk increases with the greater amplitude of vibration

Vibration

Calculating Vibration

Table D.2 Example of colour coding scheme for traffic-light system

Colour code	Time to reach EAV (2,5m/s²)	Time to reach ELV (5m/s²)
Green	More than 2 hours	More than 8 hours
Amber	30 minutes to 2 hours	2 to 8 hours
Red	Less than 30 mins	Less than 2 hours

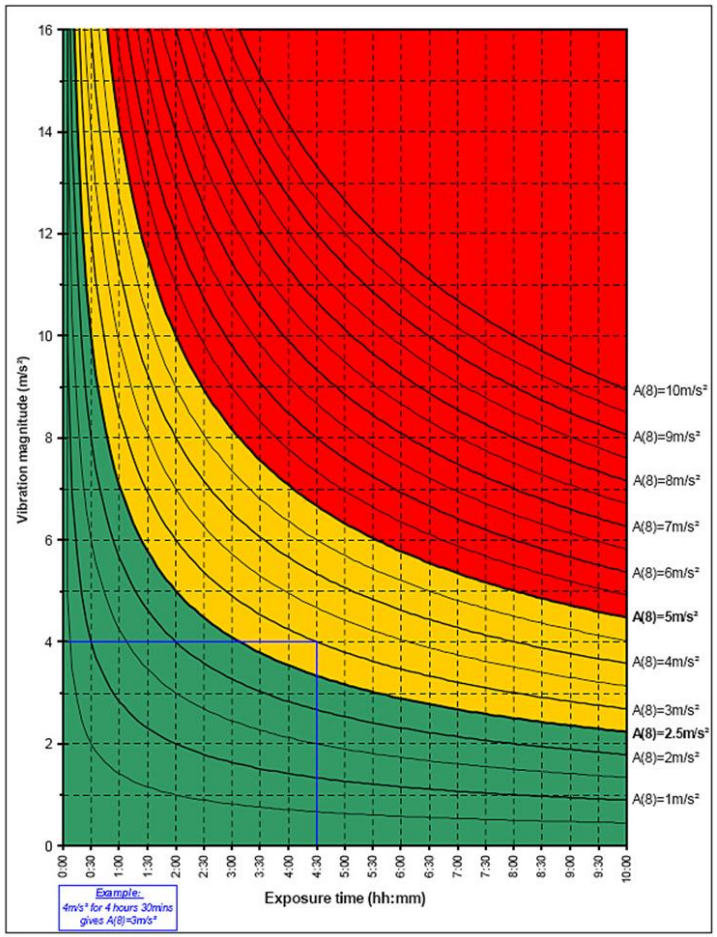
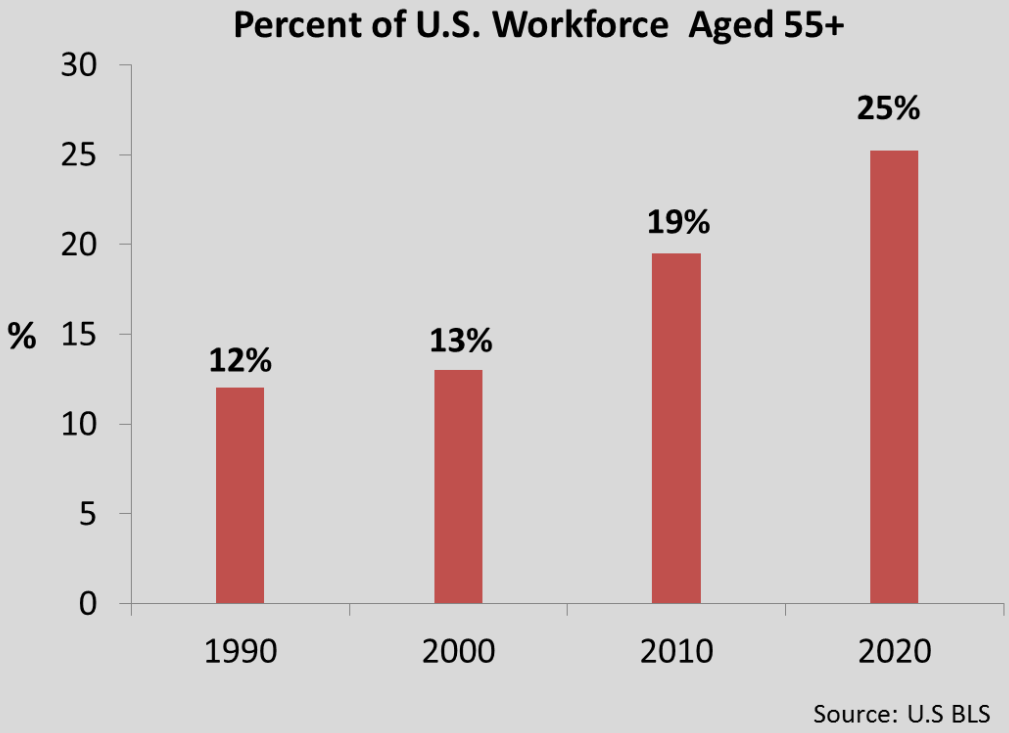


Figure D.1 Daily exposure graph

Personal Factors

- Work-style
- Age
- Height/weight
- Pre-existing injuries
- Smoking
- General conditioning



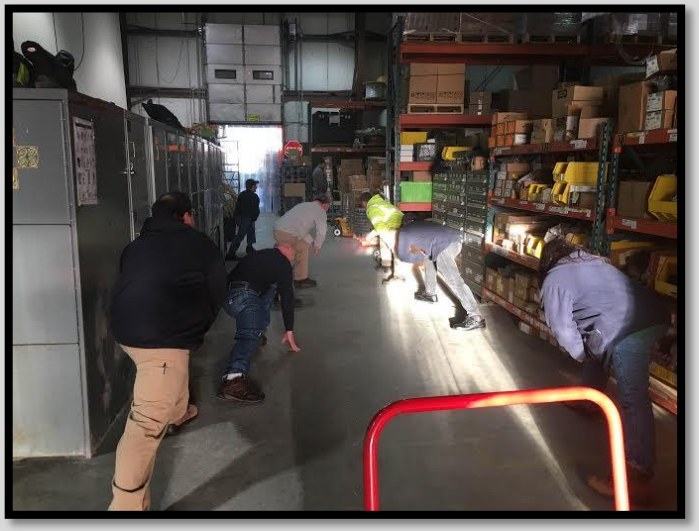
How Can I Help Prevent Injuries?

- Proper Warm-Up
- 3 Leading Indicators
  - Early Soreness
  - Behaviors
  - Ergonomics
- Understanding the Pain Experience
- Words that Harm vs Words that Heal
- Engagement

Daily Warm Up

What is it?

- Daily pre-shift stretching program designed specifically to each job position



The Benefits

- Conditions muscles and joints for injury prevention and reduced recovery time
- Increases elasticity of muscles and alignment of skeleton for improved posture
- Optimizes joint ROM
- Activates nerves to improve coordination and control
- Improves circulation
- Relieves muscle tension

Daily Warm Up

Bruegger Relief

With elbows bent at 90 degrees and hands straight in front of you, palms up; move hands away from midline of the body and slowly tilt head back looking upwards.

Neck

Place hand on the back of your head and gently push ear to shoulder and than chin to chest. Repeat on other side.

Wrist/Forearm

With arm straight in front of you at shoulder height pull fingers back towards you and than with fingers pointing down pull hand towards your body.

Row

Stand and extend arm in front of the body. Pull back leading with the elbows squeezing the shoulder blades together. Repeat.

Arm Swing

Swing the arms across the body. Use a smooth easy motion.

Reach High – Low

Reach high with one arm and reach low with the other arm. Squeeze shoulder blades. Switch arms and repeat the process.

March - progression

March in place. Keep a smooth rhythmic pace and do not stomp. If able grab your knee with either one hand or two and bring towards chest.

Hammy & Calf

Hammy – One leg at a time, heel down and toe up. Lean forward. Switch sides and repeat.

Calf – One leg at a time, keep the heel of the on the ground and make sure the knee remains straight. Bending the opposite leg at the knee, lean forward and hold. Switch sides and repeat.

Ankle Circles

While balanced place toe of boot on the ground and create a circle by rotating the ankle. For more advanced balance on one foot while making circles with the foot.

Sumos Side to Side

Attain a wide base and lower the hips, keeping feet flat on the ground. Sway from side to side lowering the hips much like a Sumo Wrestler.

Step Back

Step straight back with one leg as shown. Repeat with opposite leg.

Step Back Progression

Step straight back with one leg as shown. As you step back, with same side arm, reach to the sky, reach over your head and lead to the front legs side and twist to front leg side. Repeat with the opposite leg.

Low Back

With hands on hips gently lean backwards. Come back to starting position and bend to the side, return to starting position and bend to the other side.

Back Rotation

Place both hands on the right hip and rotate to the right side. Return to starting position and repeat to left side.

5 Principles of Proper Body Mechanics

Square Up

- Feet and chest face the same direction at the beginning, middle and end of a task



Power Zone

- Keep your body close to where you are working so you avoid bending over to reach
- Work with your elbows close to your body in the “power” zone

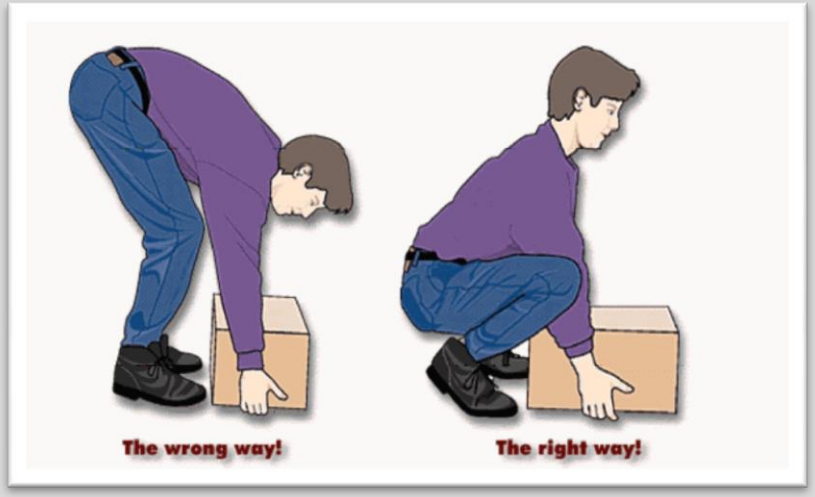
5 Principles of Proper Body Mechanics

Wide Stances

- Diagonal front to back stances are strongest with any activity

Be an Elevator, Not a Crane

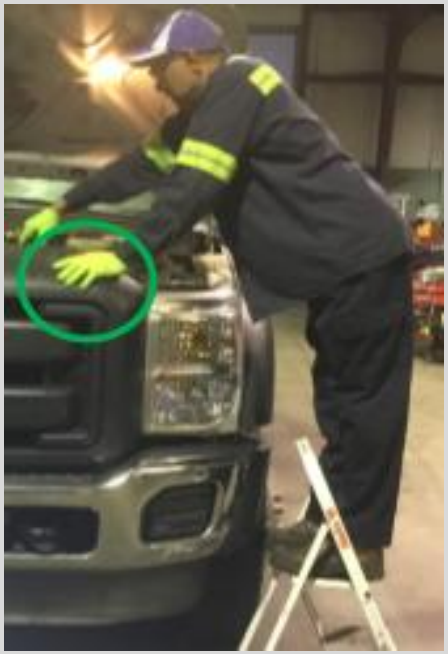
- Kneel, squat, or sit instead of bending at the waist
- Use the legs to generate power lifting, pushing or pulling



5 Principles of Proper Body Mechanics

Use Support/Build a Bridge

- Support your weight against something safe and stable when practical
- Select proper equipment transportation aides
  - Pallet jack, hand truck, etc.
- Ask a co-worker for help



Developing an “Ergonomic Eye”

Ergonomic Eye

What do you see wrong?

Ergonomic Eye

What do you see wrong?

Ergonomic Eye

What do you see wrong?

Ergonomic Eye

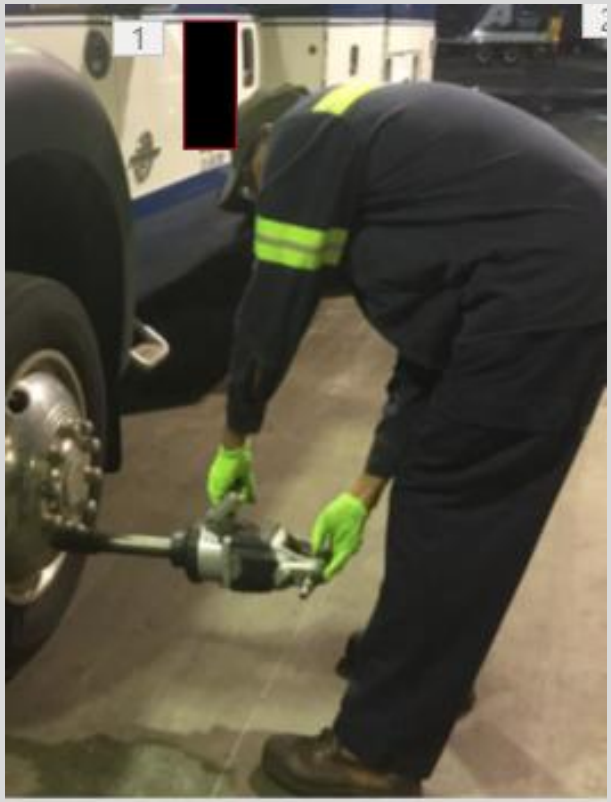
What do you see wrong?

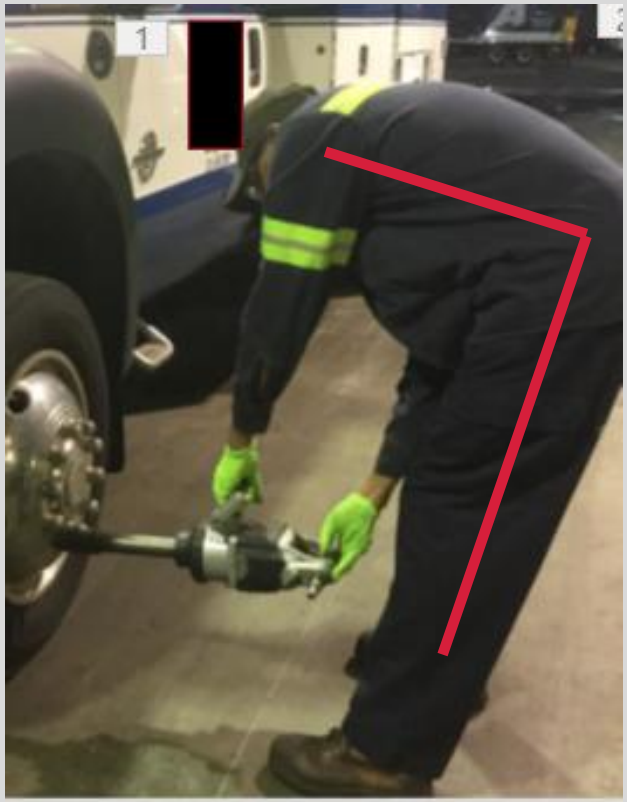
Ergonomic Eye

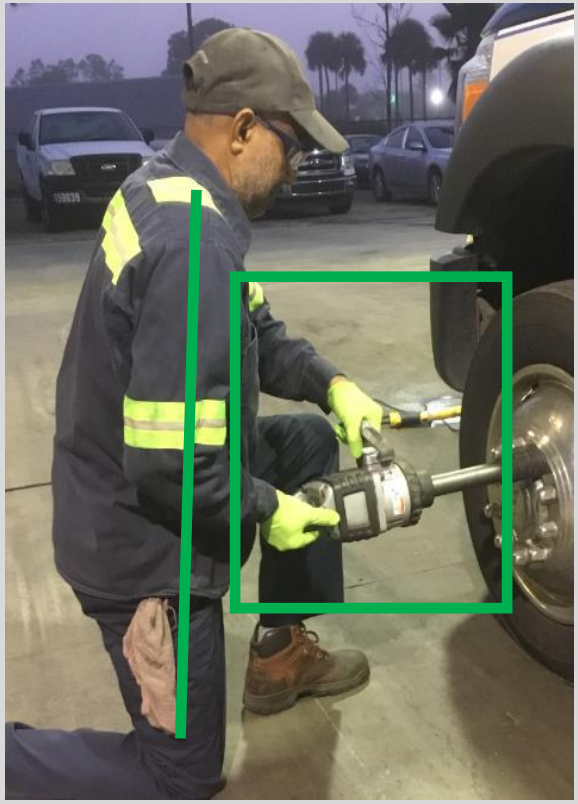
What do you see wrong?

Ergonomic Eye

What do you see wrong?

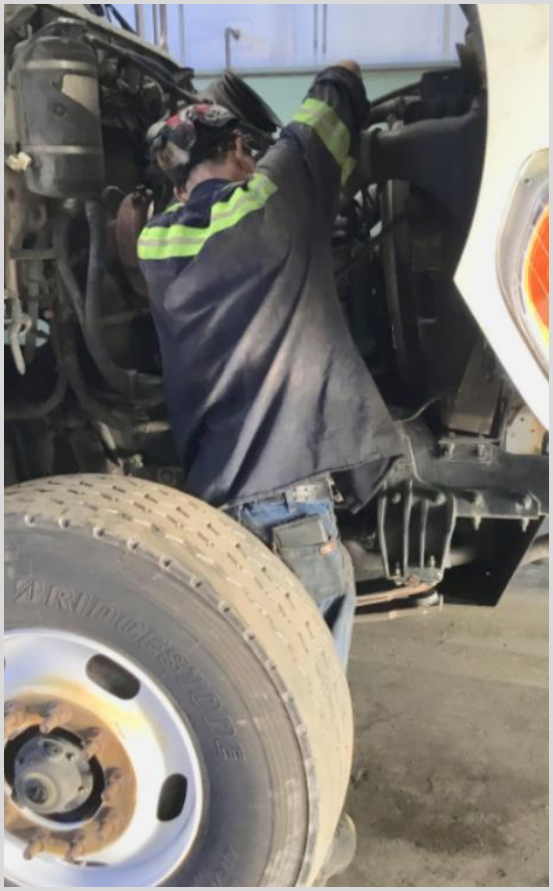


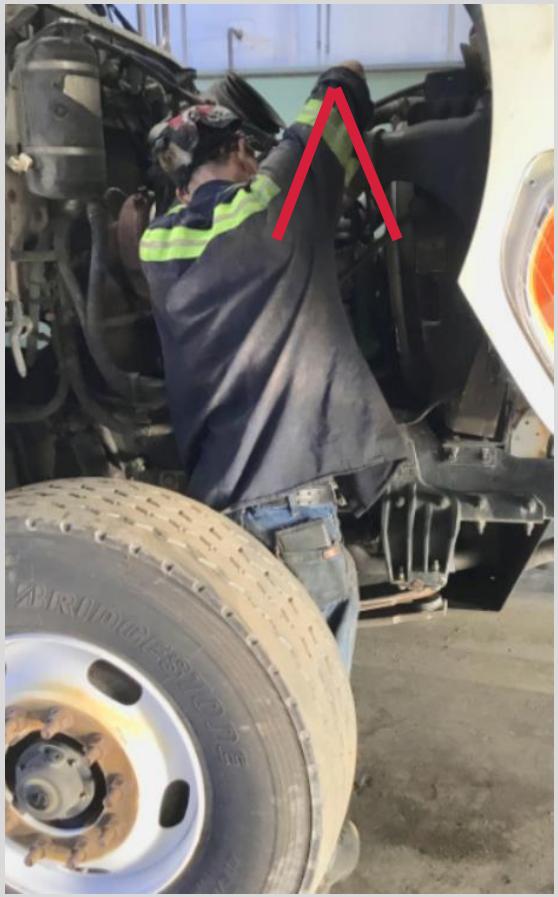




Ergonomic Eye

What do you see wrong?





Ergonomic Eye

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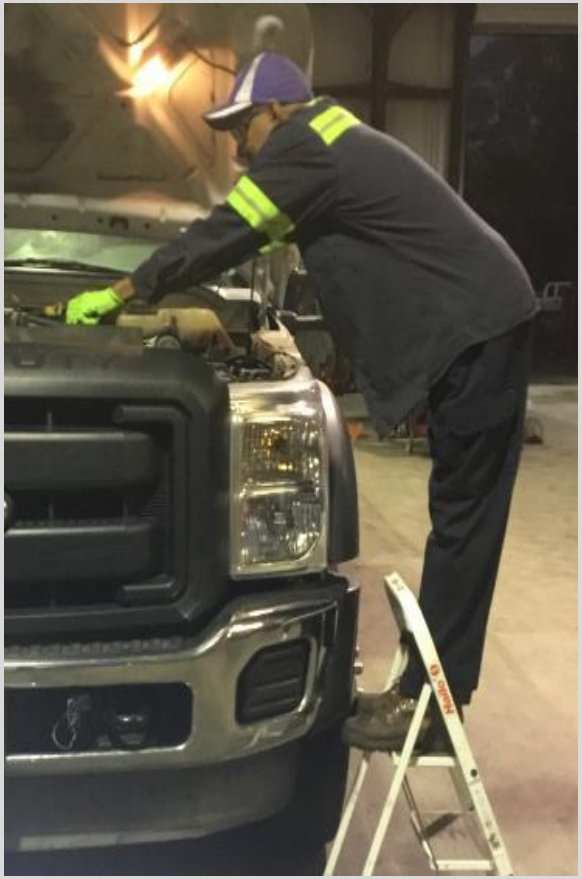

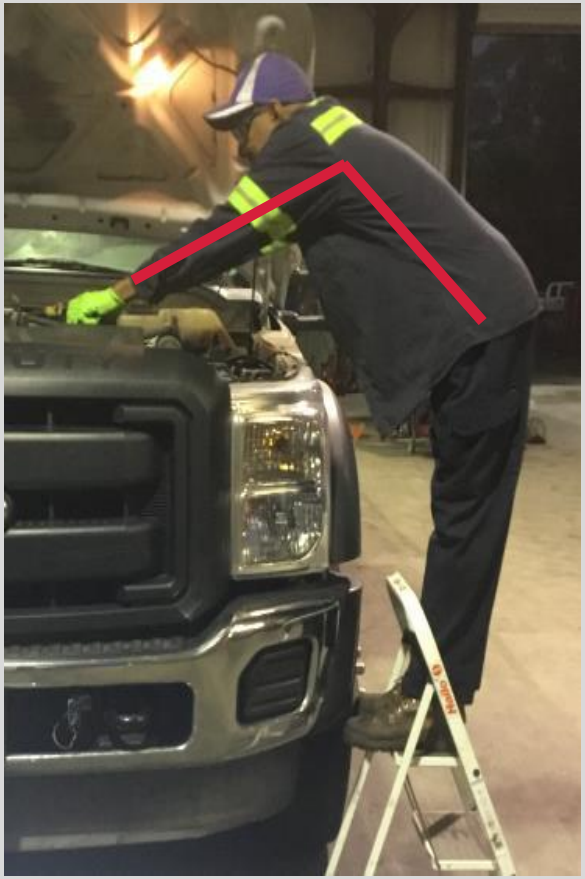

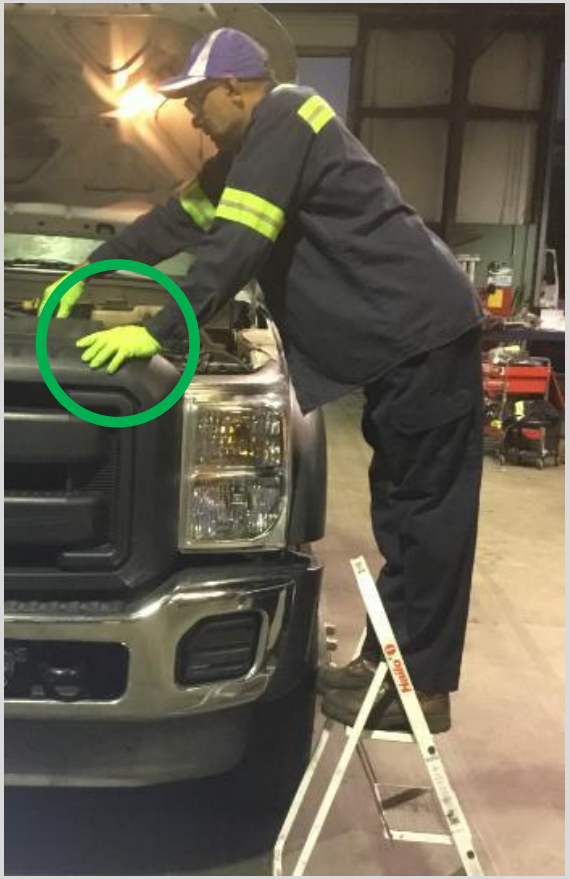

Ergonomic Eye

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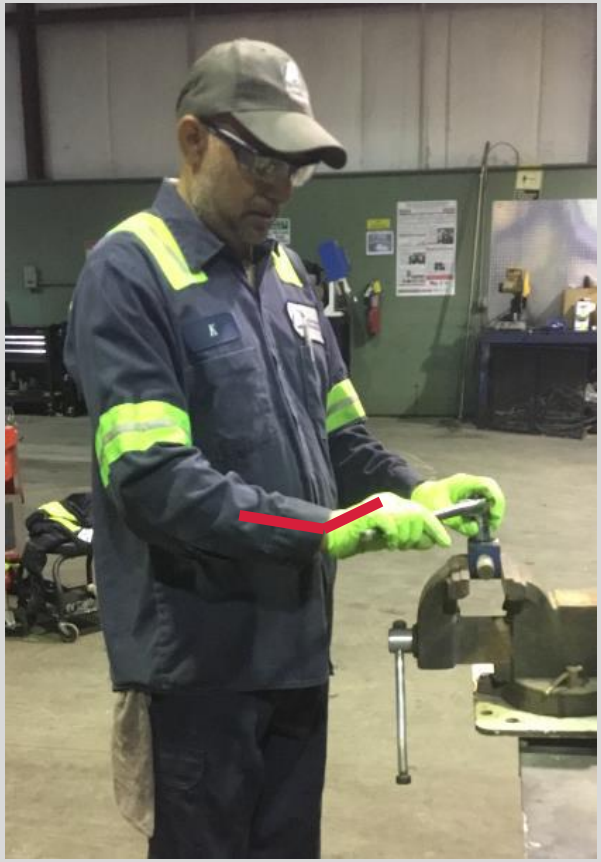
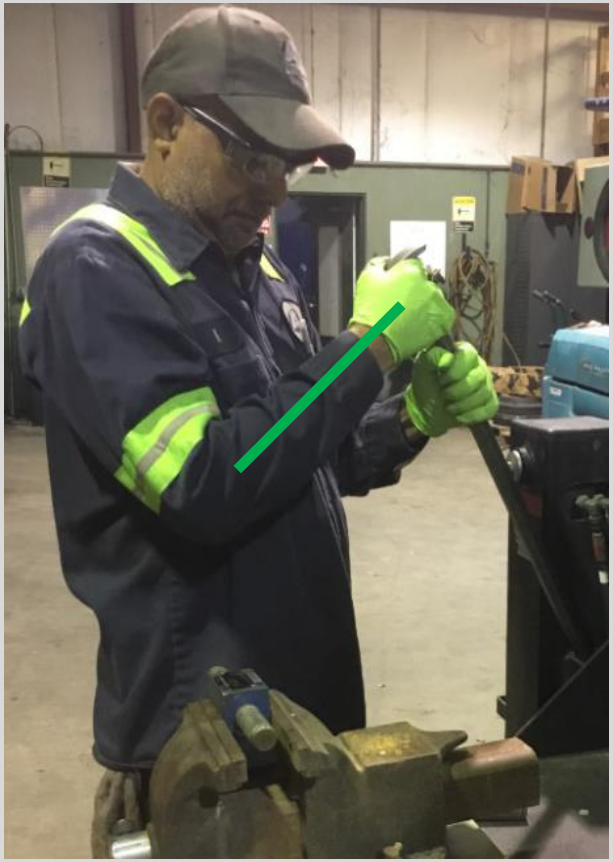
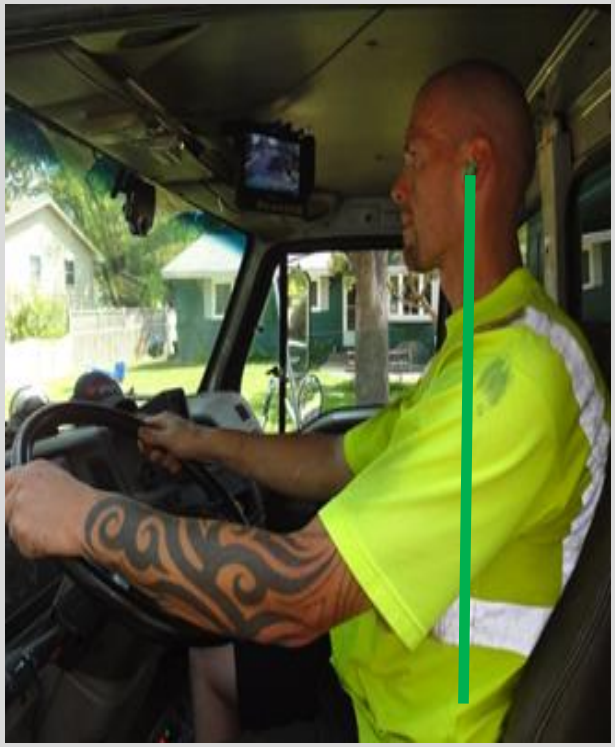




Ergonomic Eye

What do you see wrong?



Ergonomic Eye

What do you see?

Ergonomic Eye

What do you see?

The Pain Experience

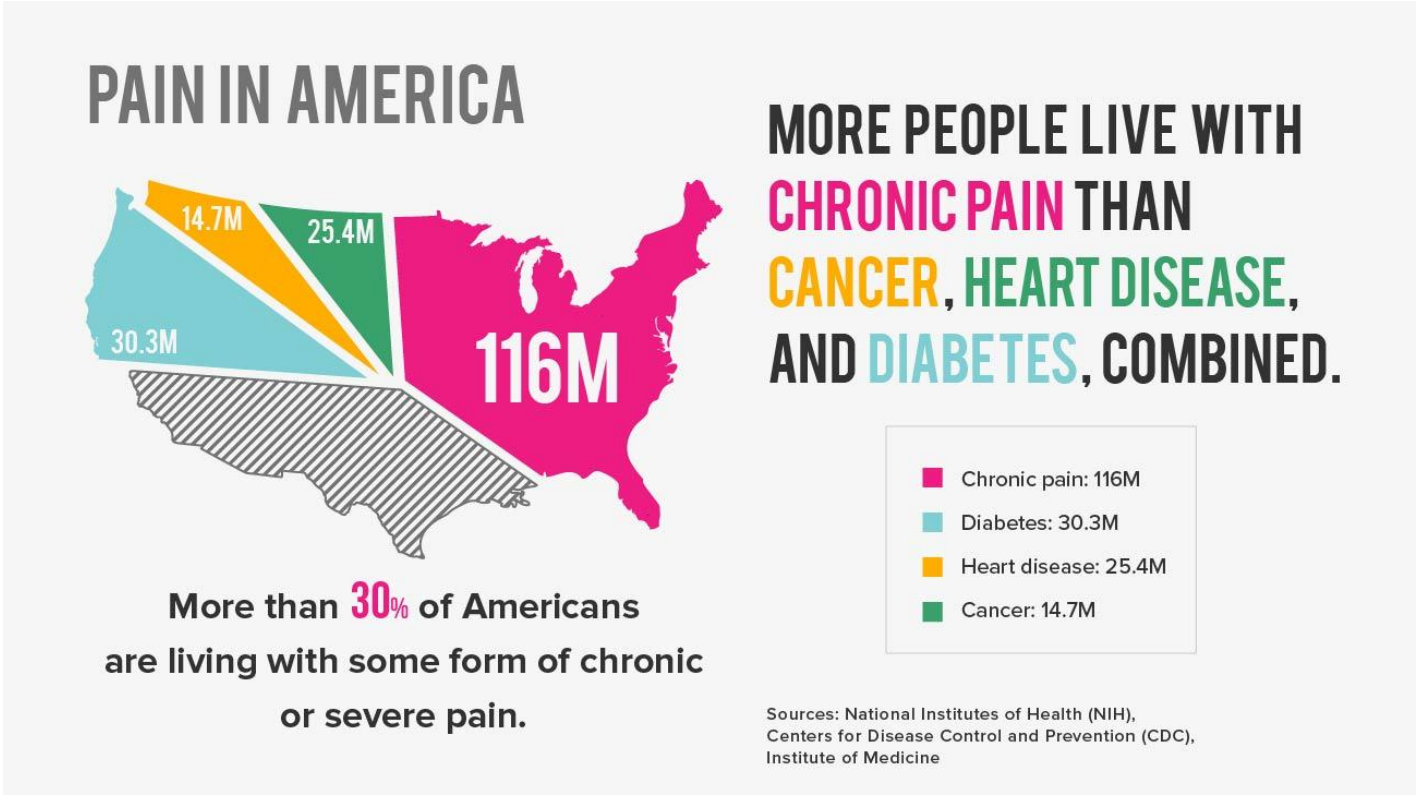
How can the same injury have two very different outcomes?

The Pain Experience

All Injuries Heal!

- Pain does NOT equal tissue damage!
- We couldn't live without pain.
  - It can be over protective at times but valuable to alert us to danger.
- Employees Fear the unknown
  - How bad is it?
  - How long will it take to heal?
  - What can and can't I do with it?
  - How much will it cost me?

Pain is normal, living in pain is NOT

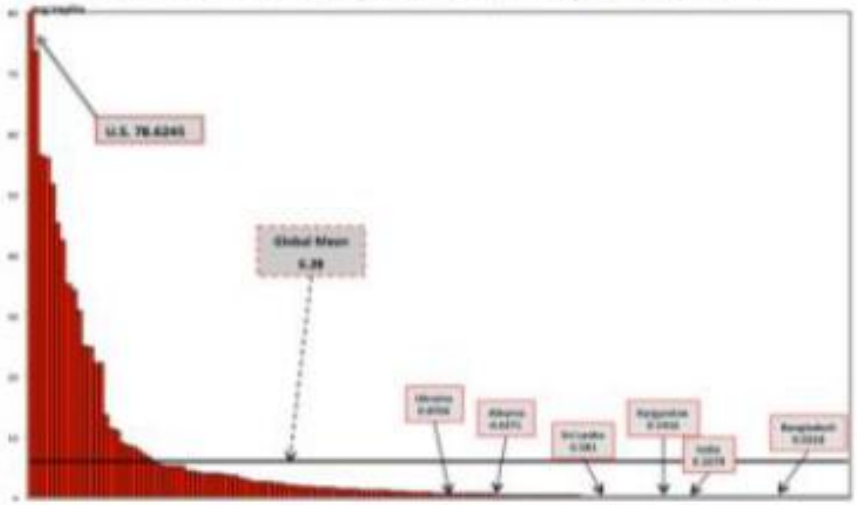


The Pain Experience

CDC
Centers for Disease Control and Prevention

US Opioid Epidemic…

Global Consumption of Morphine, 2012



Americans, constituting only 5% of the world's population, have been consuming 80% of the global opioid supply, and 99% of the global hydrocodone supply.

Manchikanti, L., et al., *Therapeutic use, abuse, and nonmedical use of opioids: a ten-year perspective*. Pain physician, 2010. 13(5): p.

What is going on?

- Perception of pain has changed
- Failed medical treatments
- Life is increasingly difficult
- Bad education on what pain really is
- Visual diagnostics like x-rays and MRIs
- Words that harm and cause fear

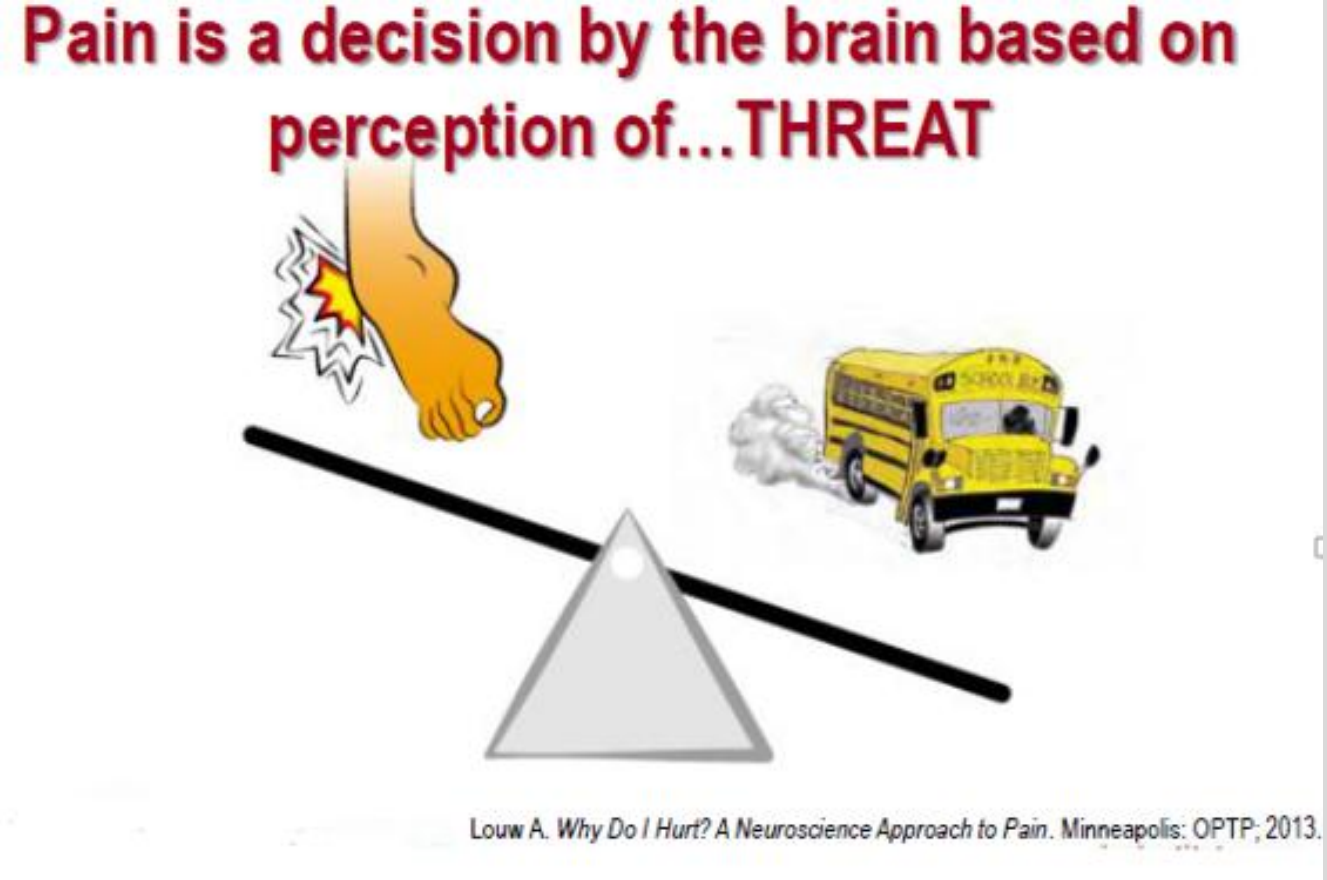
"The fear of pain is worse than pain itself"

~Gordon Waddell~

The Pain Experience

The Pain Experience

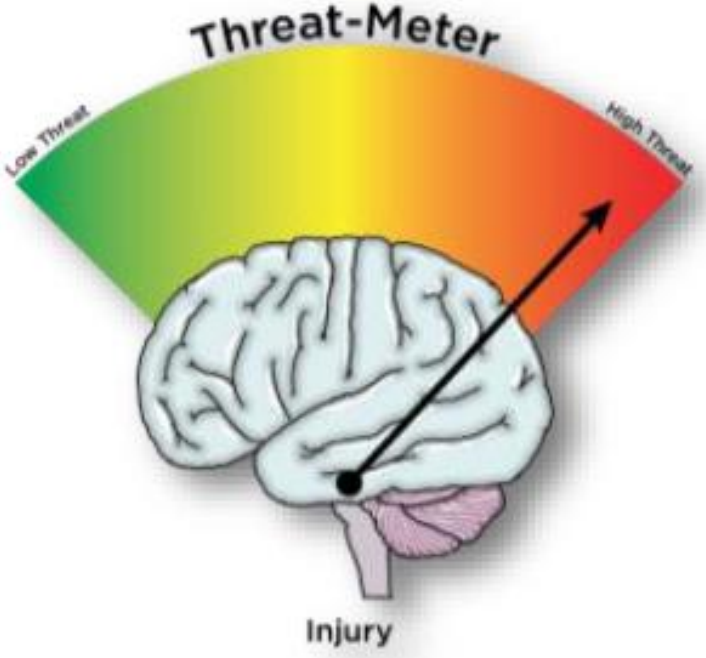
The Pain Experience



The Pain Experience

Pain is 100% produced by the brain…

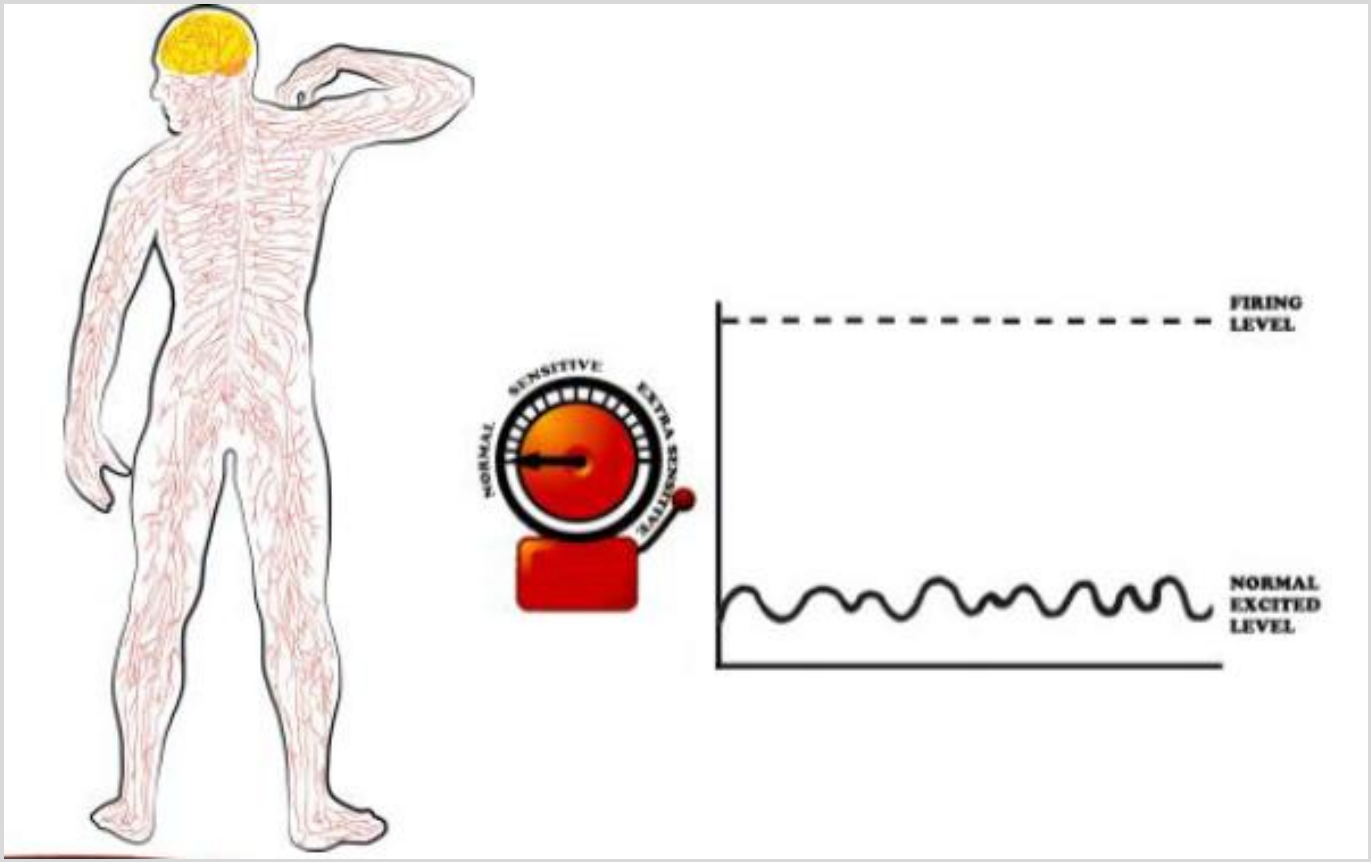
Pain is produced by the brain based on perception of **threat**



Moseley, G.L., A pain neuromatrix approach to patients with chronic pain. Man Ther, 2003. 8(3): p. 130-40.
Melzack, R., Pain and the neuromatrix in the brain Journal of Dental Education, 2001. 65: p. 1378-1382.

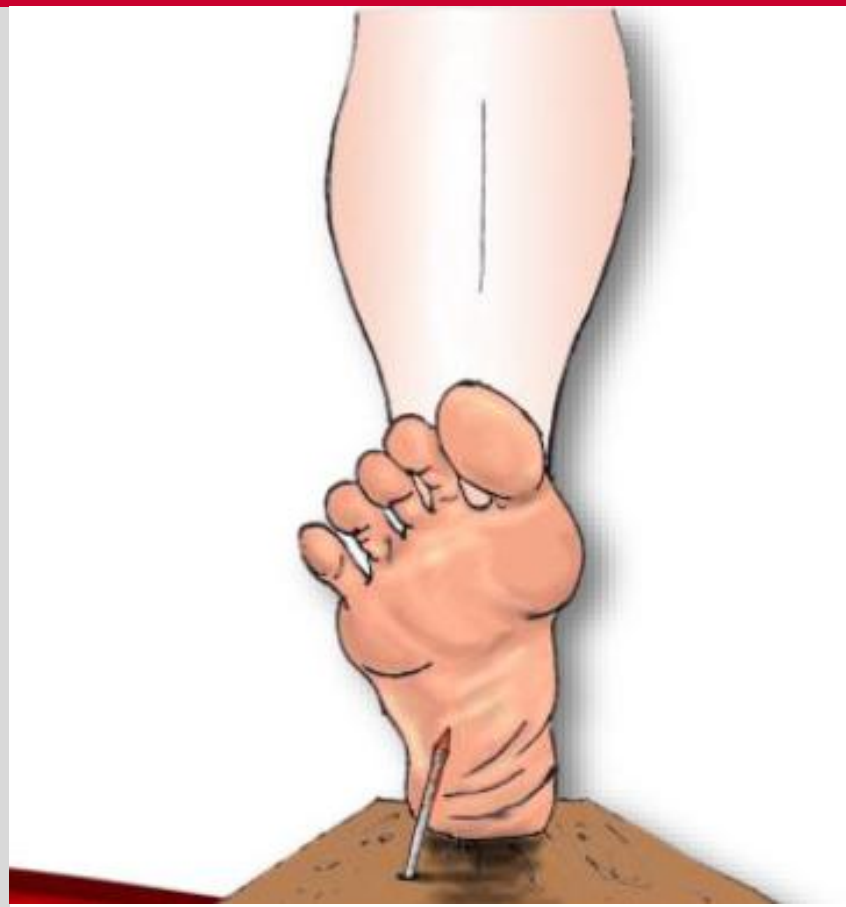
The Pain Experience

The Pain Experience

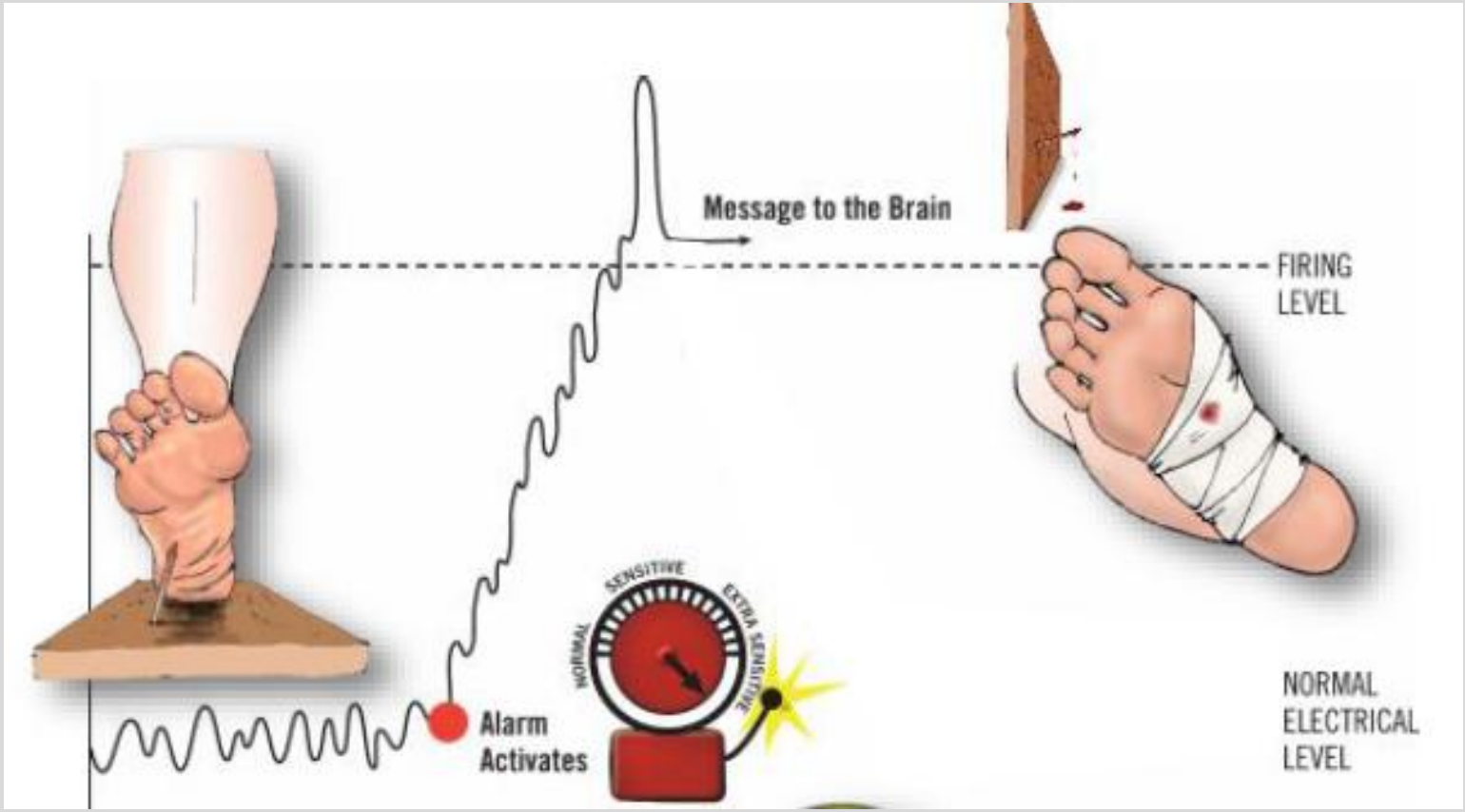


The Pain Experience

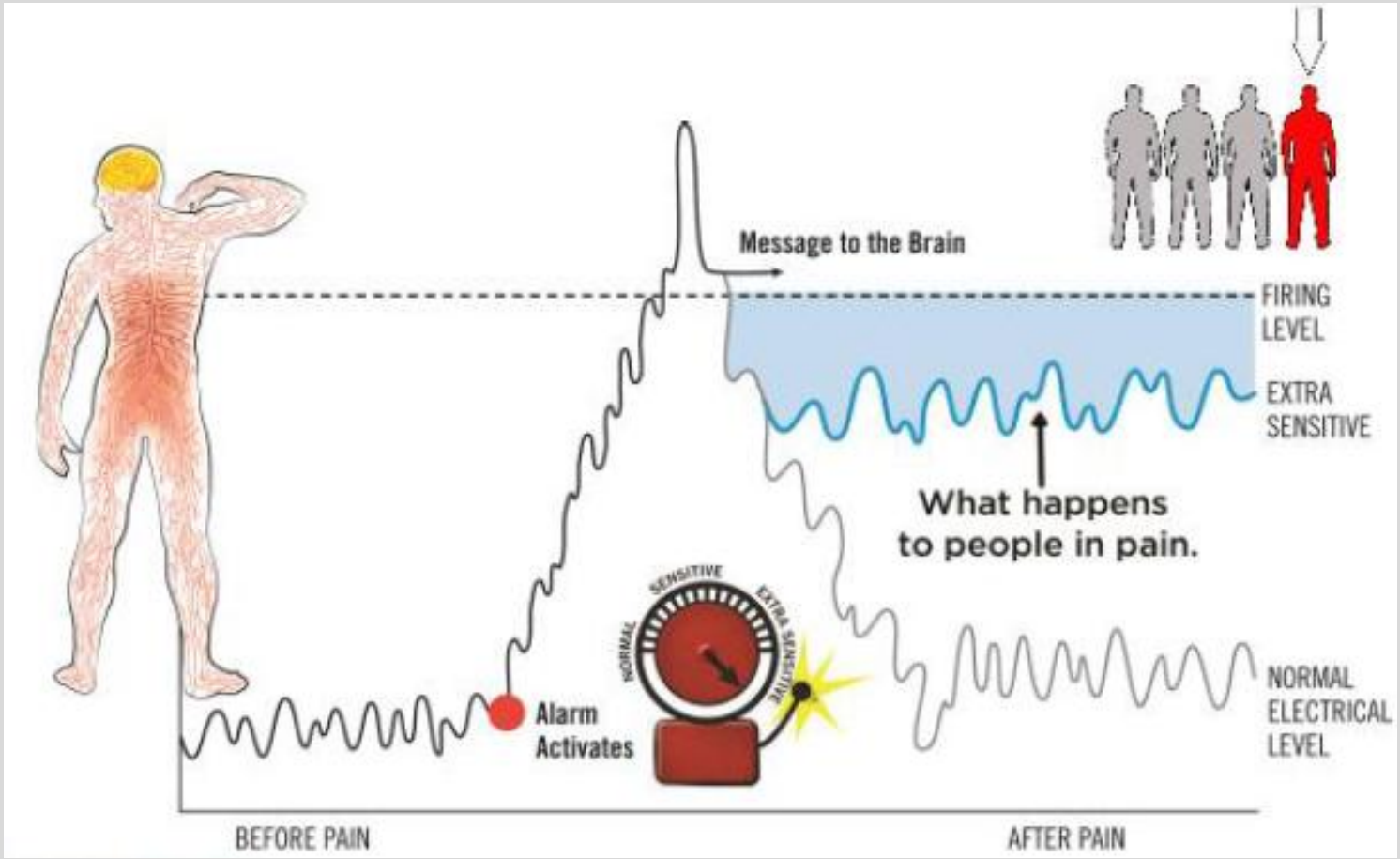
- Have you stepped on a nail before?
- Is this going to hurt?
- Do you want to know if you step on a nail?



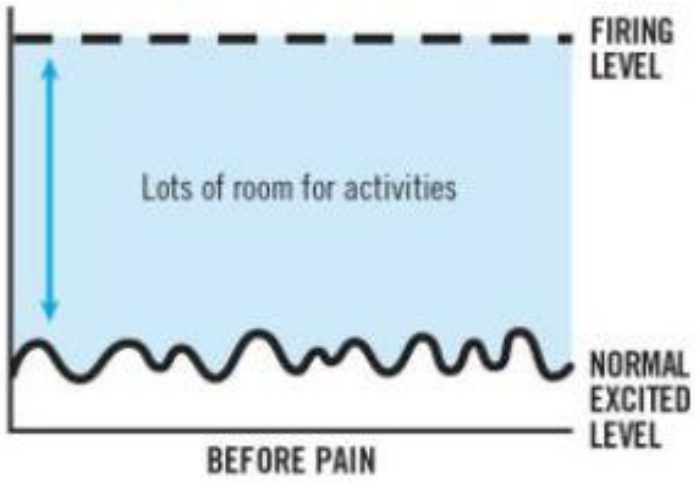
The Pain Experience

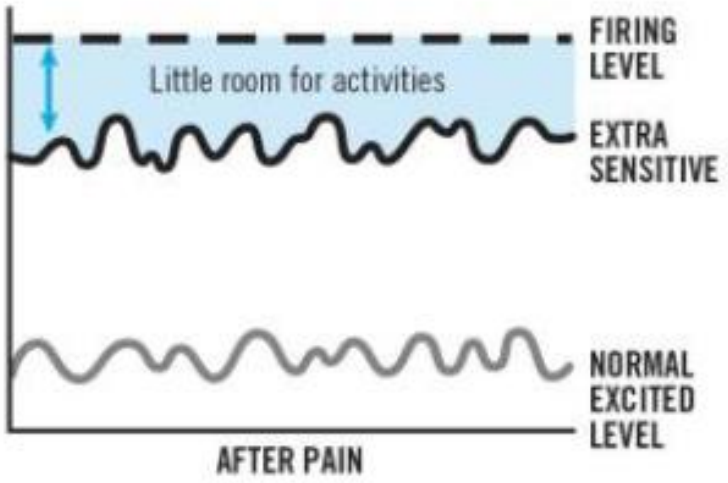


The Pain Experience



The Pain Experience





Metaphor:

- Central Sensitization
- Peripheral Sensitization
- Hyperalgesia
- Allodynia

Louw A, Butler DS, Diener I, Puentedura EJ. Development of a preoperative neuroscience educational program for patients with lumbar radiculopathy. *American journal of physical medicine & rehabilitation / Association of Academic Physiatrists.* May 2013;92(5):446-452.

The Pain Experience

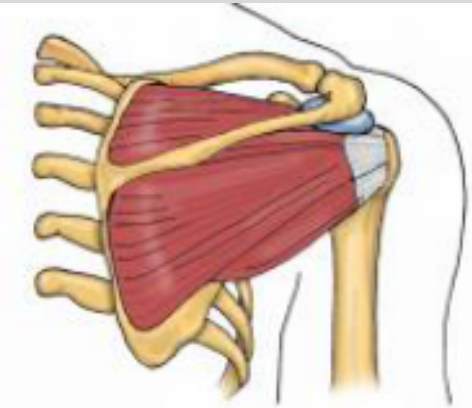
How Our Alarm System Works

Devor M. Sodium channels and mechanisms of neuropathic pain. *J Pain*. Jan 2006;7(1 Suppl 1):S3-S12.
Devor M. The pathophysiology of damaged peripheral nerves. In: Wall PD, Melzack R, eds. Textbook of Pain. 3rd ed. Edinburgh: Churchill Livingstone; 1994.

The Pain Experience

Rotator Cuff

- 1/3 people over age 30 has abnormal findings on MRI
- 2/3 people over age 70 has abnormal findings on MRI
- After successful rotator cuff surgery 90% of people have abnormal findings on MRI



Spielmann AL, Forster BB, Kokan P, Hawkins RH, Janzen DL. Shoulder after rotator cuff repair: MR imaging findings in asymptomatic individuals--initial experience. *Radiology.* Dec 1999;213(3):705-708.

Sher JS, Uribe JW, Posada A, Murphy BJ, Zlatkin MB. Abnormal findings on magnetic resonance images of asymptomatic shoulders. *The Journal of bone and joint surgery. American volume.* Jan 1995;77(1):10-15.

Reilly P, Macleod I, Macfarlane R, Windley J, Emery RJ. Dead men and radiologists don't lie: a review of cadaveric and radiological studies of rotator cuff tear prevalence. *Ann R Coll Surg Engl.* Mar 2006;88(2):116-121.

The Pain Experience

Aging and Low Back Pain

Taylor JR, Twomey LT. Age changes in lumbar zygapophyseal joints. Observations on structure and function. *Spine (Phila Pa 1976)*. Sep 1986;11(7):739-745.

The Pain Experience

Low Back

1. 85% of people in any setting will experience back pain in their lifetime
2. 50% of your employees right now have a bulged disc yet are WITHOUT PAIN
   - Bulges come and go regularly
   - Bulges will be smaller in the morning
   - Painful bulges reduce by 50% in 2 months and gone or close to gone in 6-9 months

The Pain Experience

Low Back Discomfort & Arthritis

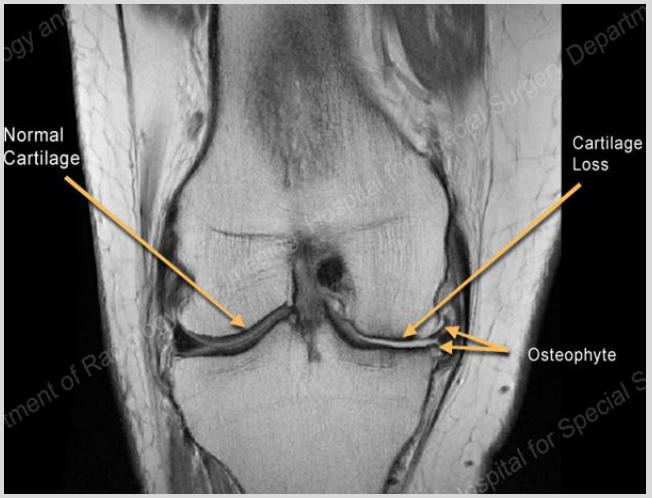
Peak pains for people occur between the ages of 35-55.

- What happens during life at this age?
  - Mortgages (Financial Issues)
  - Children (birth, going to college)
  - Changing Health Conditions
  - Stress from Job/Career
  - Family Issues (i.e. Divorce)

The Pain Experience

Knee

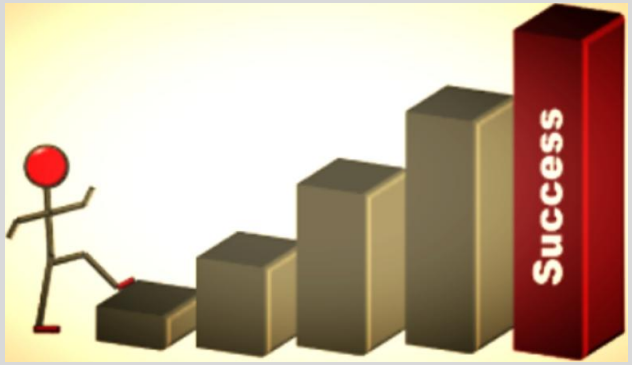
- 25-50% of MRI's show knee arthritis in pain-free people
- 35% of MRI scans in collegiate basketball players with no knee pain show significant abnormalities
- Wrinkles on the Inside!



The Pain Experience

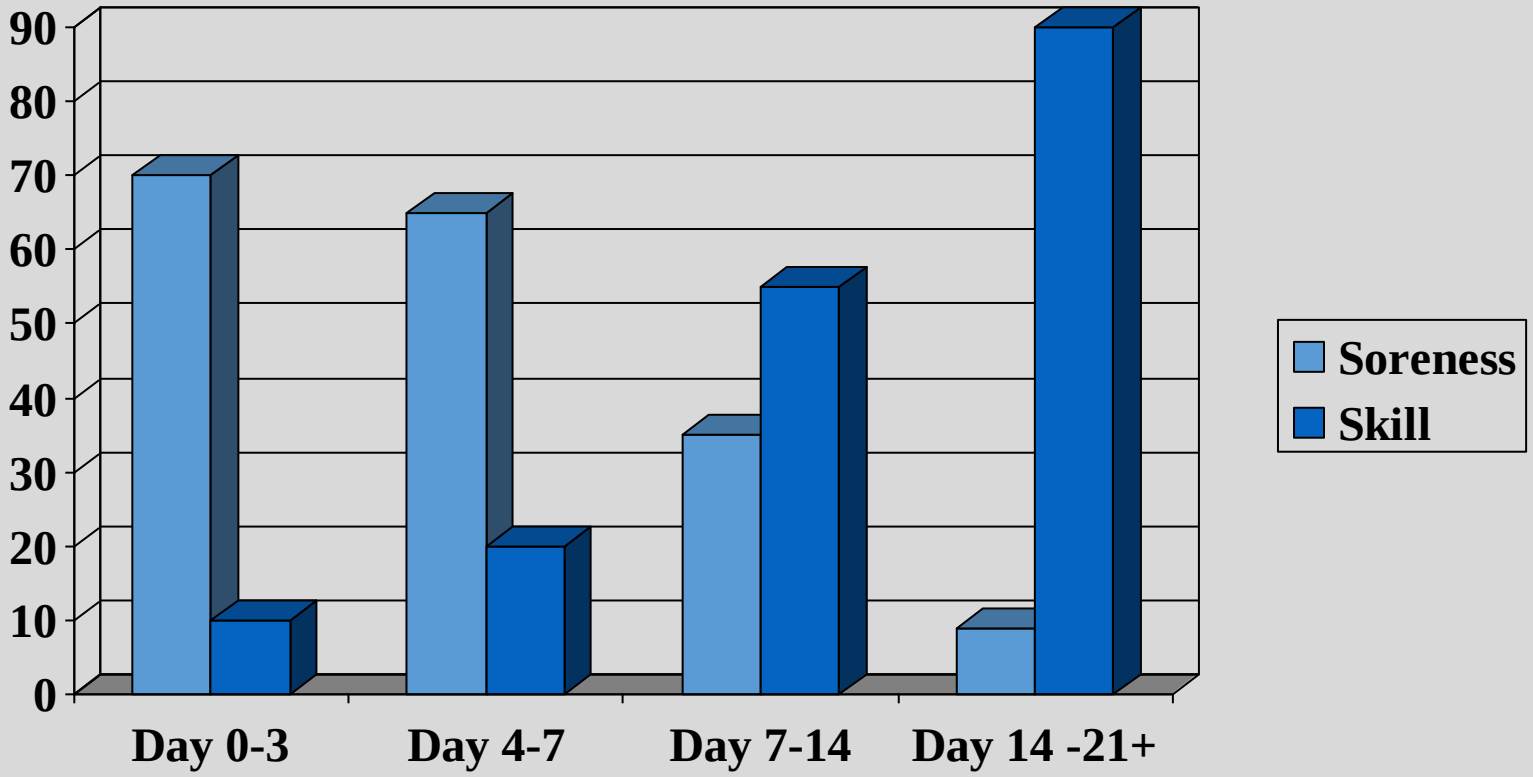
Injury -vs- Work Hardening

- Hardening process
  - New stress triggers the body's inflammatory process (healing)
  - 2-3 days = Acute soreness (discomfort)
  - 4-7 days = Soreness
  - 7-14 days = Stiffness & Achiness
  - 14-21 days = adjusted to new task



The Pain Experience

Work Hardening Process



The Pain Experience

Motion is Lotion

Movement is the biggest pain killer on the planet

A six mile run stimulates endorphin release that is equivalent to 10mg of morphine

Janal MN, Colt EW, Clark WC, Glusman M. Pain sensitivity, mood and plasma endocrine levels in man following long-distance running: effects of naloxone. Pain. May 1984;19(1):13-25.

There are thresholds for both the intensity **(>50% Vo(2)max)** and duration **(>10 min)** of exercise required to elicit exercise analgesia

Hoffman MD, Shepanski MA, Mackenzie SP, Clifford PS. Experimentally induced pain perception is acutely reduced by aerobic exercise in people with chronic low back pain. J Rehabil Res Dev. Mar-Apr 2005;42(2):183-190.

The Pain Experience

How to help reset our Alarm System

- Keep Moving!
- Set Goals and Pace to Meet Goals
- Comorbidities
  - Quit Smoking
  - Decrease Alcohol Intake
  - Weight Loss
- Proper Sleep Hygiene
- Meditation/Mindfulness Exercises
- Use Words that Heal
- Cognitive Behavioral Therapy

Engagement

- Injury perception is different for everyone
  - Upbringing
  - Past Experience
  - Catastrophizing

- PAIN often does not correlate with how bad the injury is.

Engagement

Words MATTER

- The words we use are important. Think of a small child tripping or falling. The parents reaction often determines how they react

Engagement

Words That Harm vs Heal

Doctor: “WOW! I don’t know how you walked in here today. This is the worst case I have every seen”

Patient’s thought process: My doctor has never seen a case this bad. I am broken beyond repair. What chance do I have to recover and be pain free?

Engagement

Words That Harm vs Heal

Employee reports injury: popping in wrist and it sends tingling down into my hand

- **Employee fears:** surgery, serious damage happening when it pops, lost wages with a surgery/time off, lost recreational fun activities, can’t do home projects, family impact

Engagement

Words That Harm vs Heal

So how should a supervisor react to this?

At this moment, the supervisor has a very powerful influence on what happens next for the employee. Increase fear or decrease fear…

Engagement

Words That Harm vs Heal

THE TRICK:

- It is 10 times more helpful to highlight what isn't hurt than focus on what is hurt.
- HIGHLIGHT what is good
  - It keeps the employee focused on the positives and not thinking the worse

Engagement

Words That Harm vs Heal

1. How does your hand and elbow feel? Oh they don't hurt? Great!
2. Can you open and close your hand? Very good!
3. What makes it most uncomfortable? So you only have discomfort when you twist it? That's really good! So if you squeeze something, it doesn't bother you as much? Excellent!

Not downplaying. Localizing and removing obstacles that cause more fear.

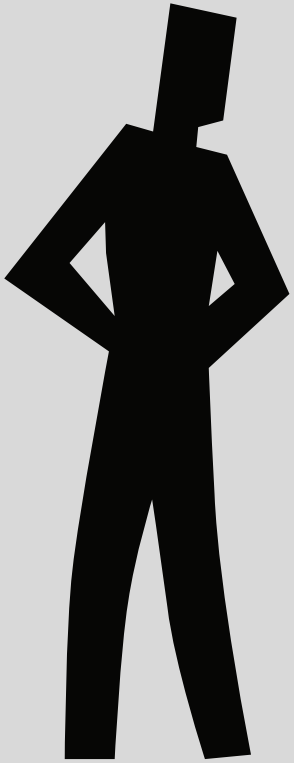
Engagement

- Making employees happy is actually the fastest way to reduce injuries in a work place.
- Happy employees are 85% more efficient.
- Happy employees have 60% less absent days, and stay at a job twice as long compared to an unhappy worker
- People rarely quit because they didn’t like the job.

Engagement

What makes employees happy?

1. Money
2. Security
3. Social/Friendship
4. PURPOSE
5. Reward or praise
6. Gratitude
7. Empathy



How Can I Help Prevent Injuries?

- Proper Warm-Up
- 3 Leading Indicators
  - Early Soreness
  - Behaviors
  - Ergonomics
- Understanding the Pain Experience
- Words that Harm vs Words that Heal
- Engagement

Keeping Employees From Becoming Patients

Questions/Comments/Discussions?