SPRAINS & STRAINS

Why Your Prevention Efforts Aren’t Working!

Our Presentation Will Begin Soon

SPRAINS & STRAINS

Why Your Prevention Efforts Aren’t Working!

ICW Group Risk Management Services

Today's Presenter:

Dave Moore, AEP

Risk Management Consultant

Today's Topics

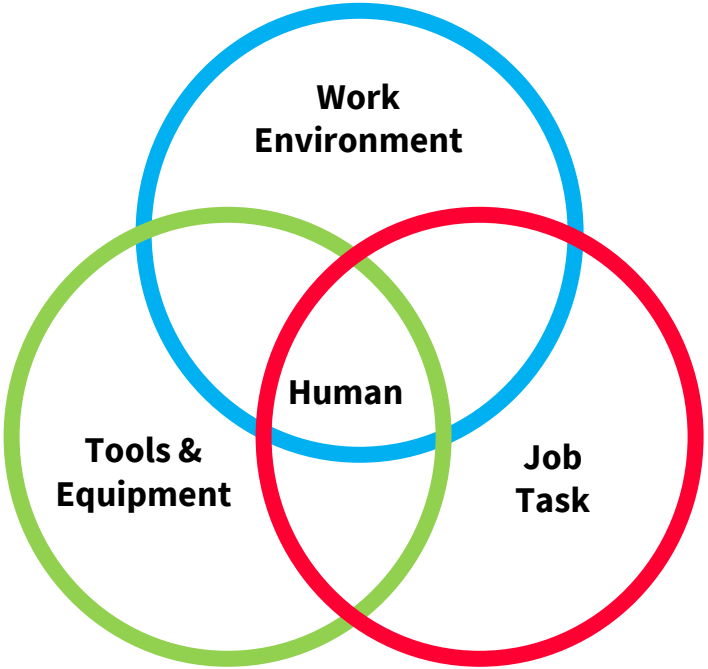
- Ergonomics
- Strains and Sprains Background
- Myths vs. Facts
- ICW Group's Risk Framework
- 5 Tips to Reduce Sprain/Strain Risk
- ICW Group's Resources

What is Ergonomics?

Ergonomics is the science that is concerned with the design of equipment, facilities, operations, and environments to match the capabilities and limitations of people.

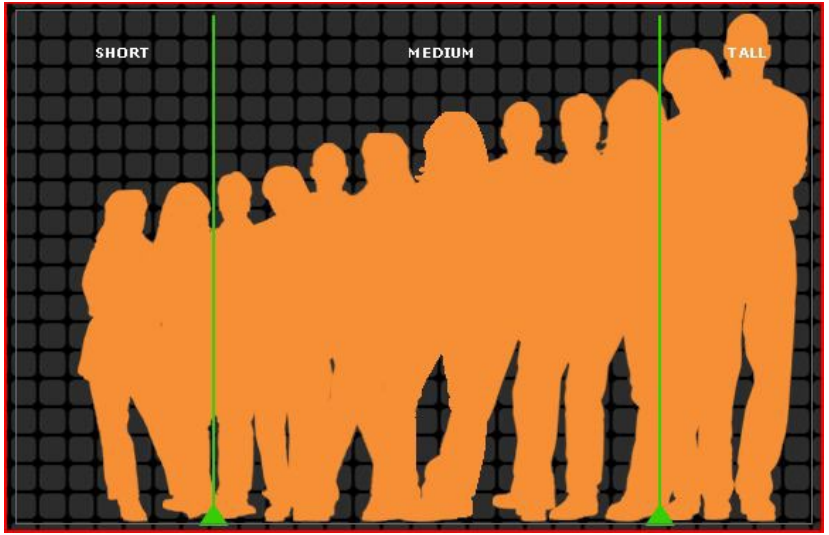
Basically, Ergonomics is…

Fitting the job to the person.



How much is too much?

What is “safe work”?

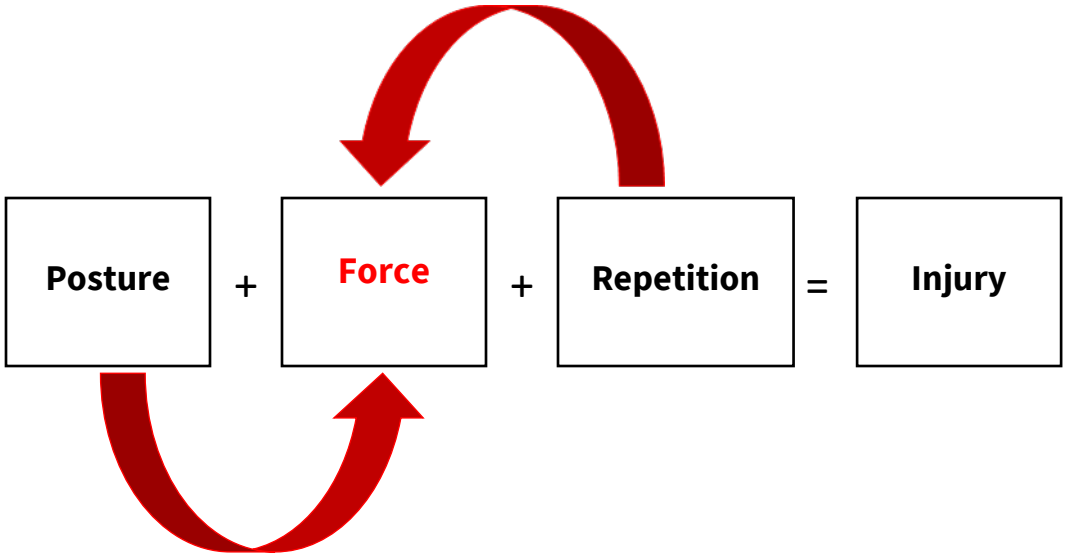


Ergonomic job design must address this equation

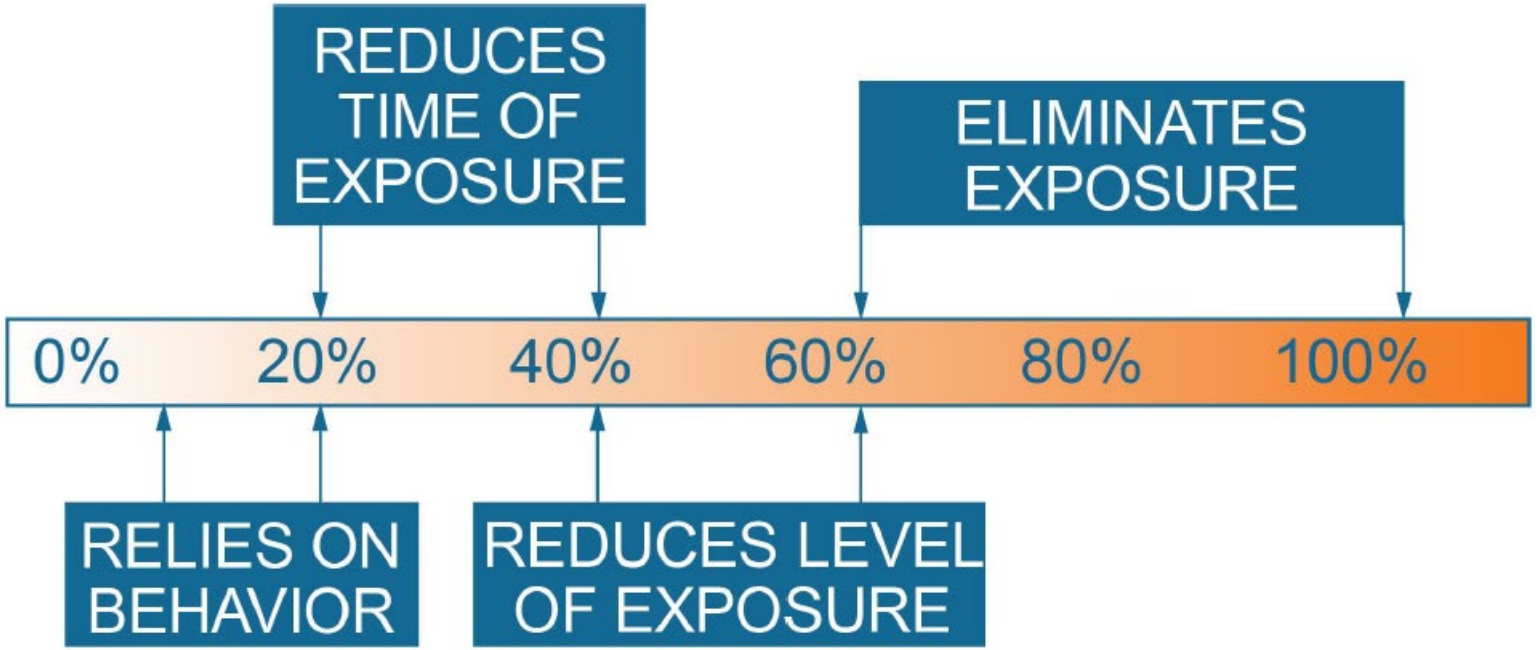
$$\text{Strain} = \frac{\text{Job Physical Demands}}{\text{Worker Capacity}}$$

What are strain and sprain risk factors?

Elements of a task that increase the likelihood of the development of strains and sprains.



Effectiveness of ergonomics interventions



Goggins RW, Spielholz P, Nothstein GL. (2008). Estimating the effectiveness of ergonomics interventions through case studies: implications for predictive cost-benefit analysis. J of Safety Res. 2008;39(3):339-344.

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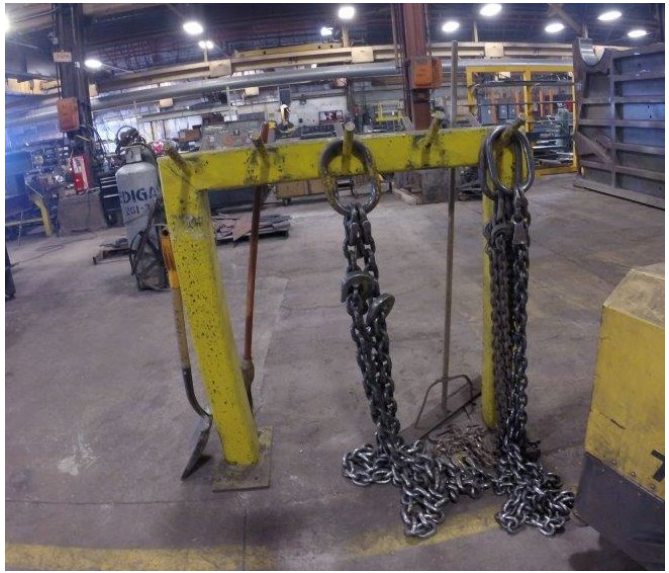
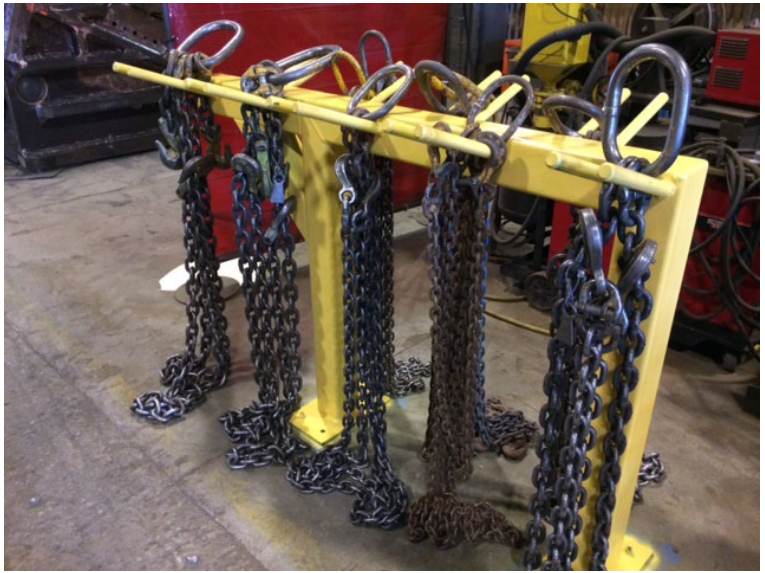
Chain sling storage example





Myths vs. Facts

What you think is a
FACT
may actually be a
MYTH!

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Myths vs. Facts

Myth #1

- Sprains & Strains are not a problem

Fact

- 23% of all lost time claims
- #1 injury type for agriculture, construction, manufacturing & warehousing
- Average of 14 lost workdays per injury

Source: National Safety Council

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Our customers 5 year total

- $647M in claim costs
- 28% of overall claim costs
- 28% of claim count

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Myths vs. Facts

Myth #2

- Training workers how to lift properly is effective at preventing sprains and strains

Fact

- Dozens of studies show training has no impact on manual lifting injury rates

Our customers 5 year total

5 ½ year study of 3000+ postal workers found no reduction of:

- median cost per injury
- time off from work per injury
- back & related musculoskeletal injuries
- rate of repeated injury after return to work
- Only the subjects' knowledge of safe behavior was increased by the training!

"A Controlled Trial of an Educational Program to Prevent Low Back Injuries", The New England Journal of Medicine; National Institutes of Health

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Myths vs. Facts

Myth #3

- Back belts prevent injuries caused by lifting

Fact

- Studies show back belts, while reducing back bending during lifting, don’t reduce incidence of back injury claims or low back pain

Black Belts

Case Study

- 160 Retail Stores
- 89 Required Back Belts
- 6311 Workers Surveyed

New England Journal of Medicine 2000; 284:2727-2732

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Black Belts

“In the largest prospective cohort study of back belt use…, neither frequent back belt use nor a store policy that required belt use was associated with reduced incidence of back injury claims or low back pain. "

New England Journal of Medicine; 284:2727-2732

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Myths vs. Facts

Myth #4

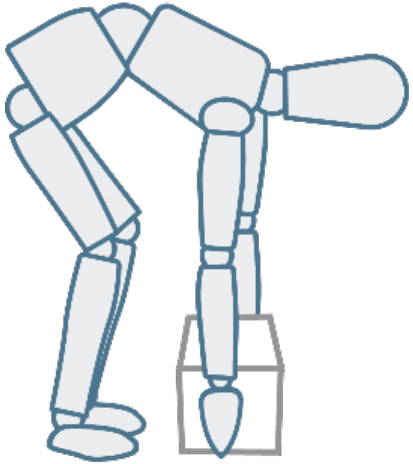
- Using the squat lifting technique helps prevent back injuries

Fact

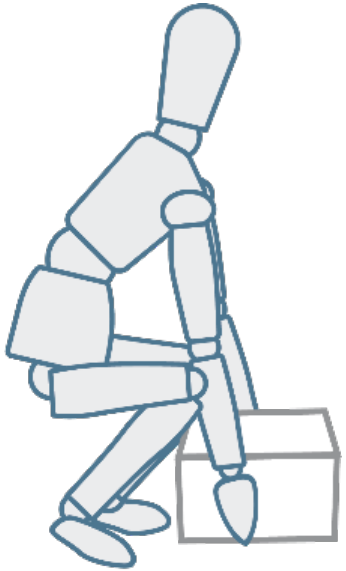
- Spinal compression forces are estimated to be equal or higher in squat lifting

What we have been taught

Lifting's a breeze when you bend with the knees

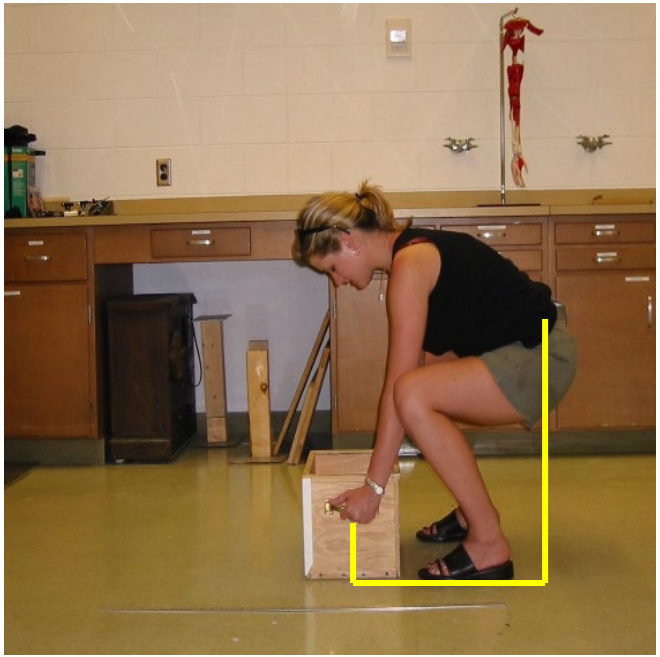


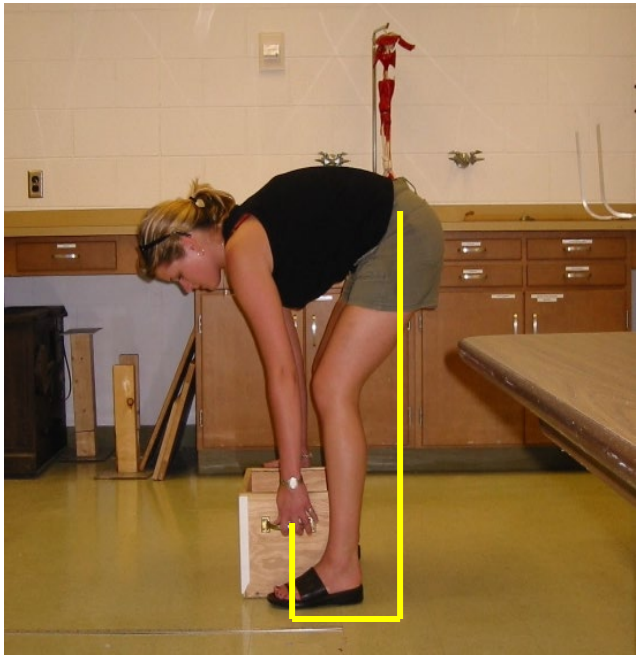
The wrong way!



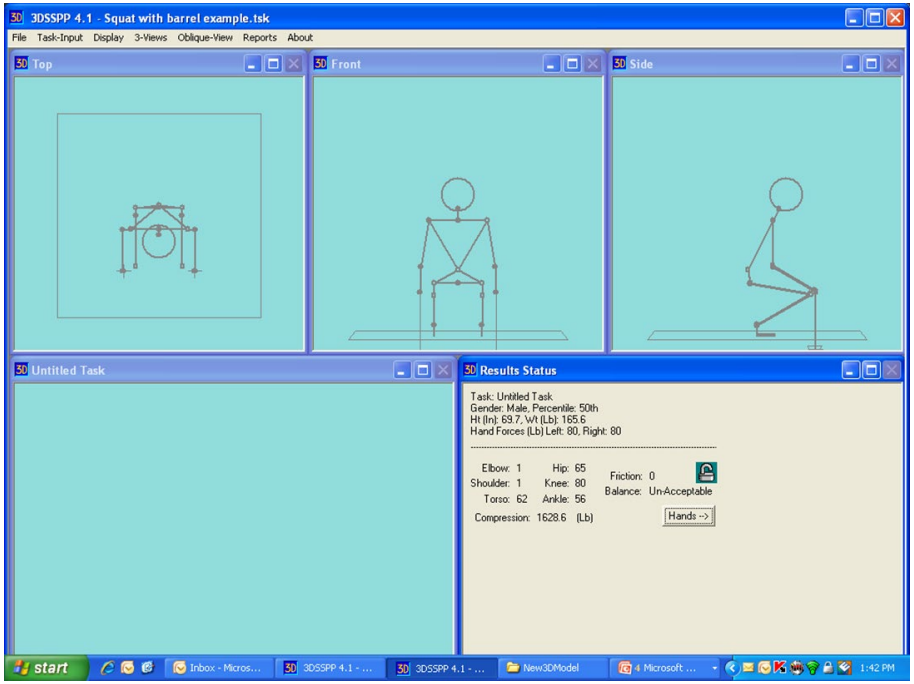
The right way!

What we have been taught





What we have been taught



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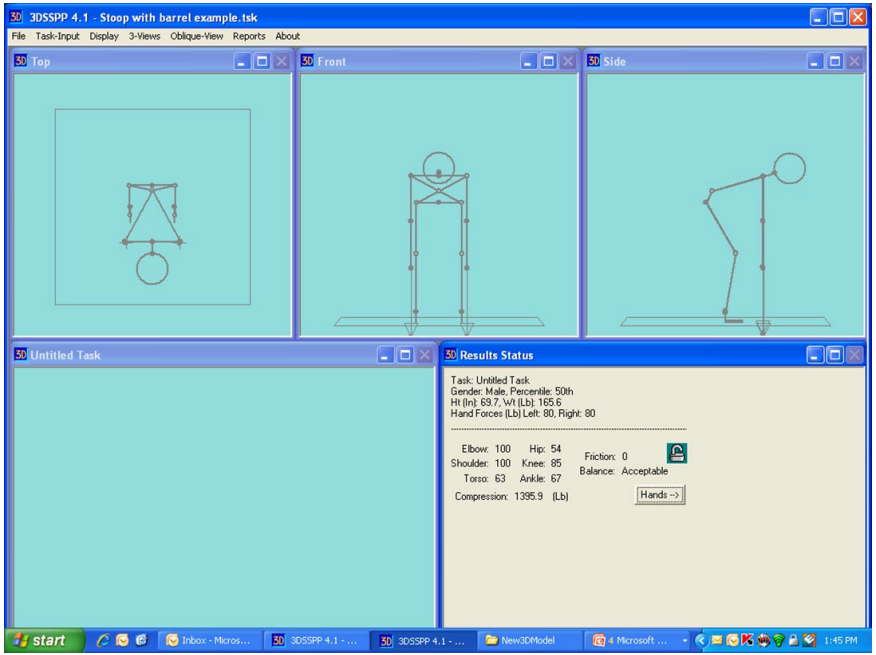


Stoop vs squat lifting

“The current in vivo biomechanical study…

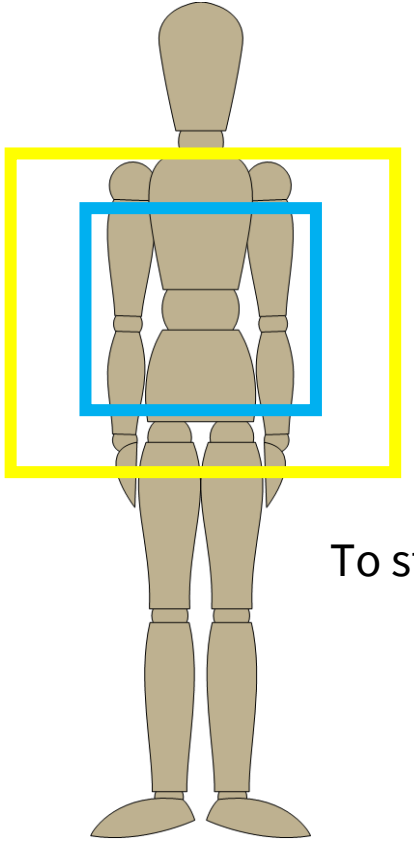
does not provide evidence that spinal loads differ substantially between stoop and squat lifting.”

- Journal of Biomechanics

Spine and back lifting risk factors

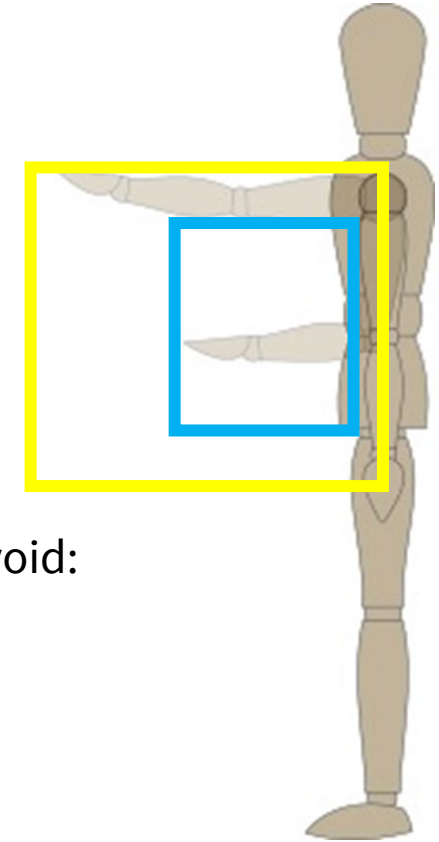
- Sitting or standing for long periods
- Twisting the body
- Bending away from neutral
- Working outside of safe work zones
- Increasing velocity during a lift
- Non-smooth lifts
- Large horizontal distances
- Arms away from the body
- Bulky or uneven loads
- Weight > 35#

Safe Work Zones



Best Work Zone

Preferred Work Zone



To stay within this work zone avoid:

Twisting

Bending

Reaching

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Low back injury prevention solutions

Position items off the floor

- Preferably between knee and chest height

Limit manual lifting

- 50 pound limit under ideal conditions

Mechanical assist devices

- Talk to vendors

Shoulder injury risk factors

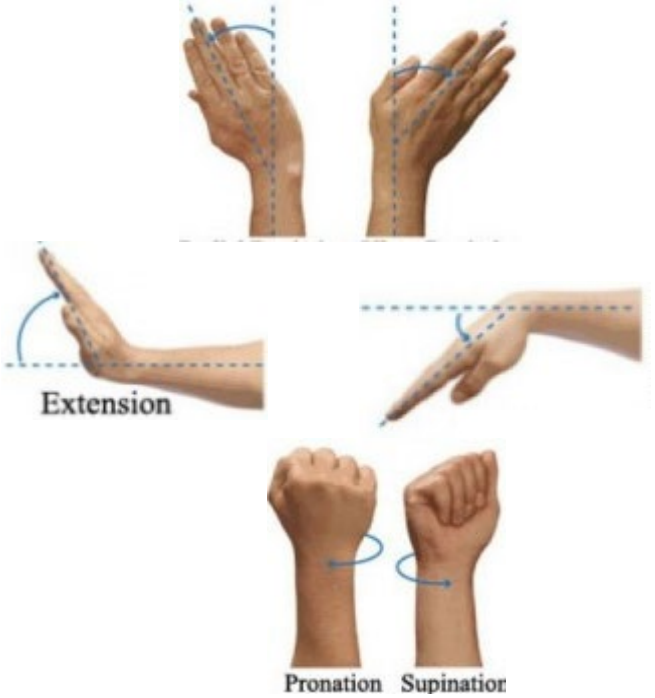
- Reaching above shoulder level
- Reaching behind the back
- Reaching forward
- Holding the arm up
- Holding the arm out

Wrist and hand injury risk factors

- Pinching with force
- Use of a small or large diameter tool
- Use of a single digit
- Torque reaction from tools
- Improper glove size
- Vibrating tools

Effects of wrist posture on grip strength

Wrist Posture	Percent of Maximum Grip Strength Available
Ulnar (40˚)	75 %
Radial (25˚)	80 %
Extension (45˚)	75 %
Flexion (45˚)	60 %
Flexion (65˚)	45 %



Effects of grip span

Grip Span	Percent of Maximum Grip Strength Available
2.5“	85 %
2.0“	100 %
1.5”	75 %
1.25”	60 %
1.0”	30 %

Myths vs. Facts

Myth #5:

- Investing in mechanical lift aids isn't worth the expense

Fact:

- Mechanical lifts can result in a great ROI – considering a single sprain / strain injury costs …

$18,000+ average cost

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Traditional Approaches

- Body Mechanics Training
- Back Belts
- Get Workers to Keep their Backs Straight

The ICW Group Risk Framework

The Traditional Approaches Give Way to New Methods

The ICW Group Risk Framework

- Number of lifts / pushes / pulls required for tasks

- Torso twisting
- Below-the-knee lifts
- Over-the-shoulder lifts
- Extended arm lifts
- Load weight
- Force push / pulls
- Task duration

- Prior injuries
- Health of the worker
- Availability of modified duty

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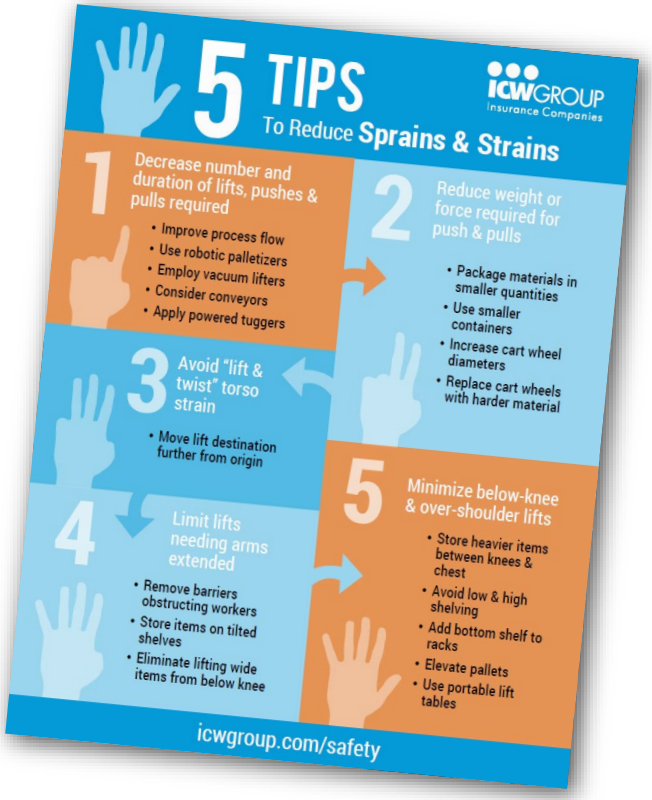
5 Practical Tips to Reduce Sprains & Strains



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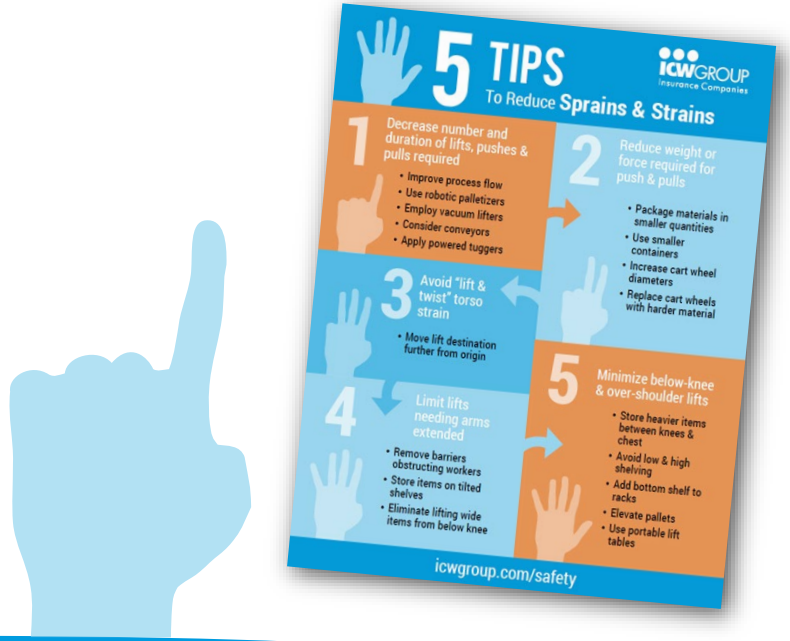
1. Decrease number and duration of lifts, pushes or pulls required

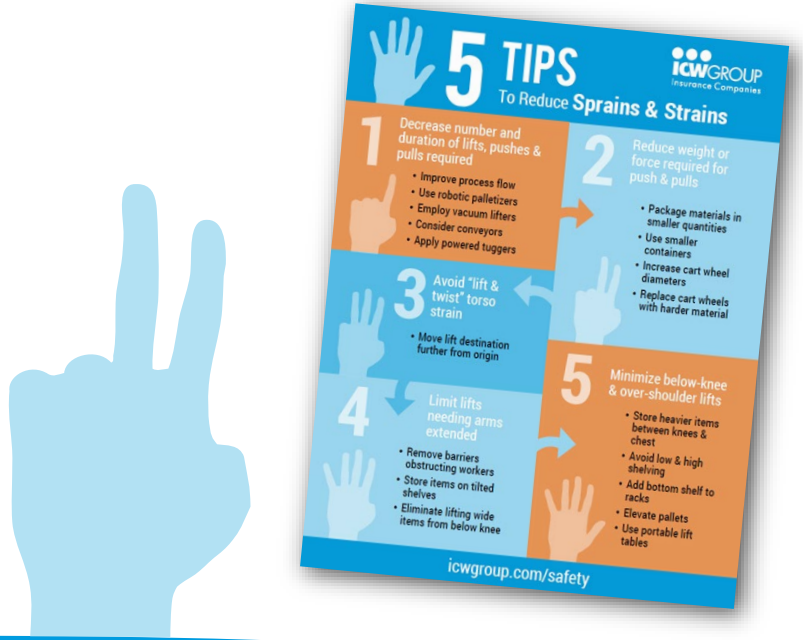
- Improve process flows
- Use robotic palletizers
- Employ vacuum lifters
- Consider conveyors
- Apply powered tuggers



1. Decrease number and duration of lifts, pushes or pulls required

2. Reduce weight or force required for push & pulls

- Package materials in smaller quantities
- Use smaller containers
- Increase cart wheel size
- Replace cart wheels with wheels made of harder material



2. Reduce weight or force required for push & pulls

Cost of Reducing Weight Lifted

- Local Hardware Store Pricing on concrete mix:
  - 80 lbs bag: 6.3¢ per lbs
  - 50 lbs bag: 7.8¢ per lbs (24% more expensive)
- Contractor using 8,000lbs/month switches to smaller bags = $1428 increased cost per year

$18,000 avg. cost of just one sprain/strain claim

12.5 years it would take to reach this cost!

2. Reduce weight or force required for push & pulls

Cart Push/Pull Forces

- Doubling wheel diameter halves the force required to get moving and keep moving
- Replacing hard rubber wheels with harder material, like polyurethane…

…can reduce required forces over 80%

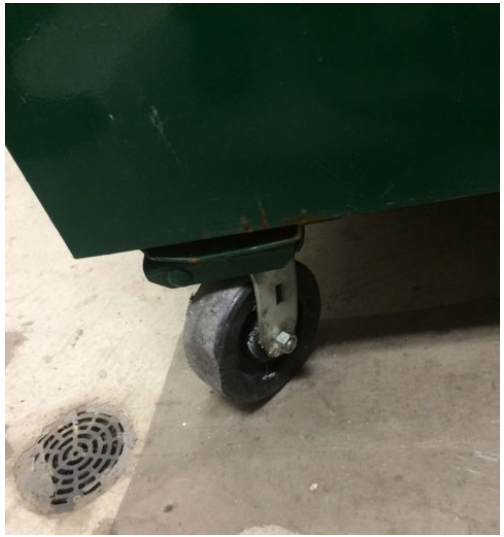
2. Reduce weight or force required for push & pulls

Cost of Replacing Cart Wheels

- 6” light-medium duty polyurethane = $200 per cart
- 15 carts = $3000
- Wheel maintenance comparable to hard rubber wheels

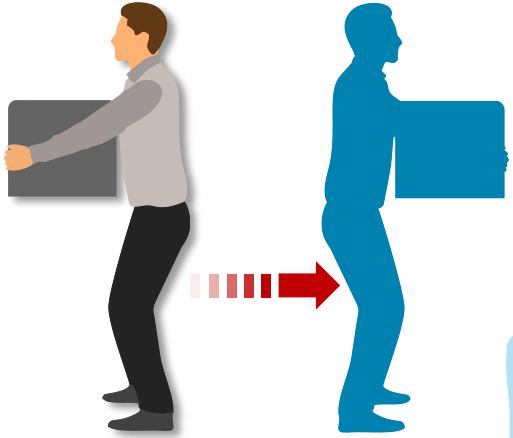
$18,000 avg. cost of just one sprain/strain claim

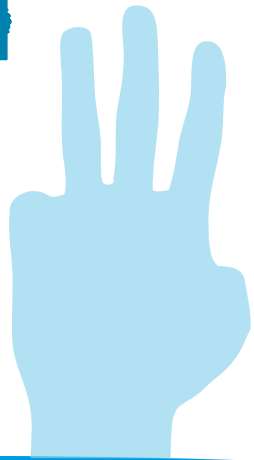
Caster condition

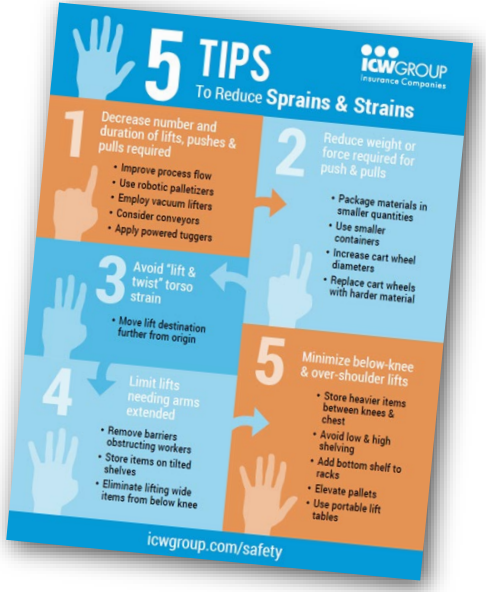


3. Modify lifts that encourage torso twisting

Move lift destination further from origin

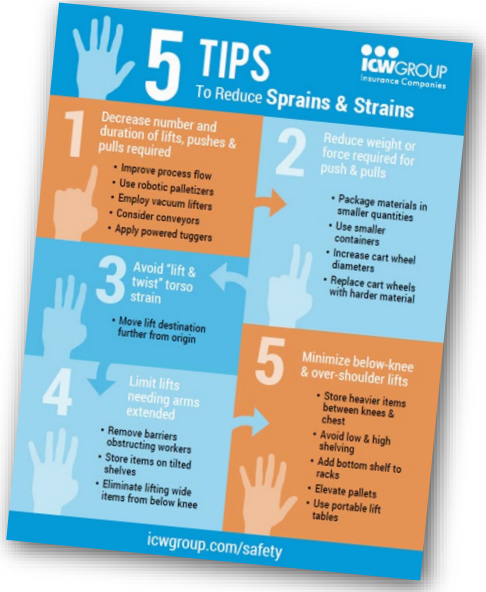






4. Limit lifts needing arms extended

- Remove barriers obstructing workers
- Store items on tilted shelves
- Eliminate lifting wide items from below knee height



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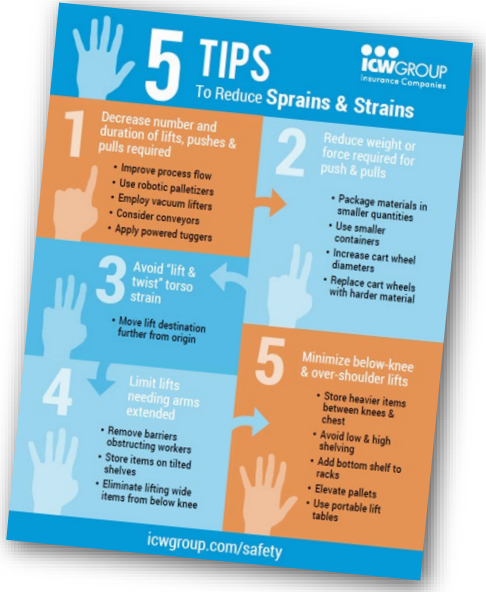
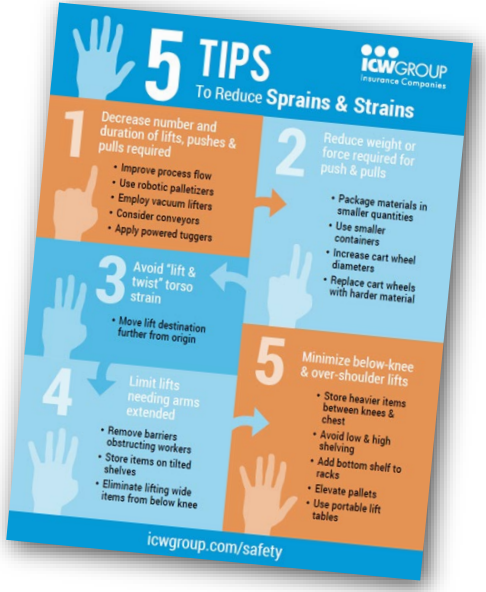


5. Minimize below-knee & over-shoulder lifts

- Store heavier items between knees & chest
- Avoid low & high shelving
- Elevate pallets
- Use portable lift tables



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5. Minimize below-knee & over-shoulder lifts

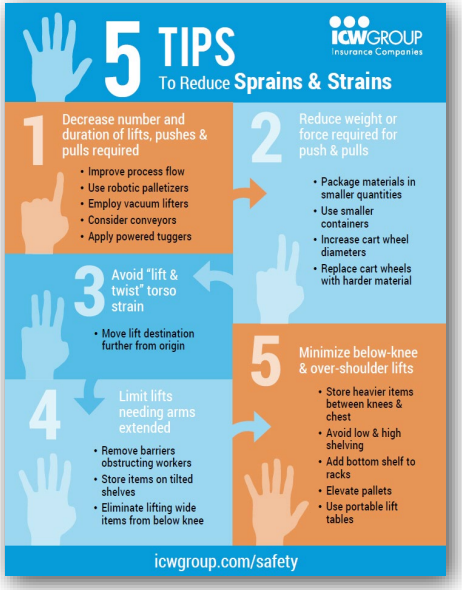
$250 - $800

$2K - $10K

5. Minimize below-knee & over-shoulder lifts

5. Minimize below-knee & over-shoulder lifts

- Decrease number and duration of lifts, pushes & pulls required
- Reduce weight or force required for push & pulls
- Modify lifts that prompt torso twisting
- Limit lifts needing arms extended
- Minimize below-knee & over-shoulder lifts



ICW Group Safety & Risk Resources

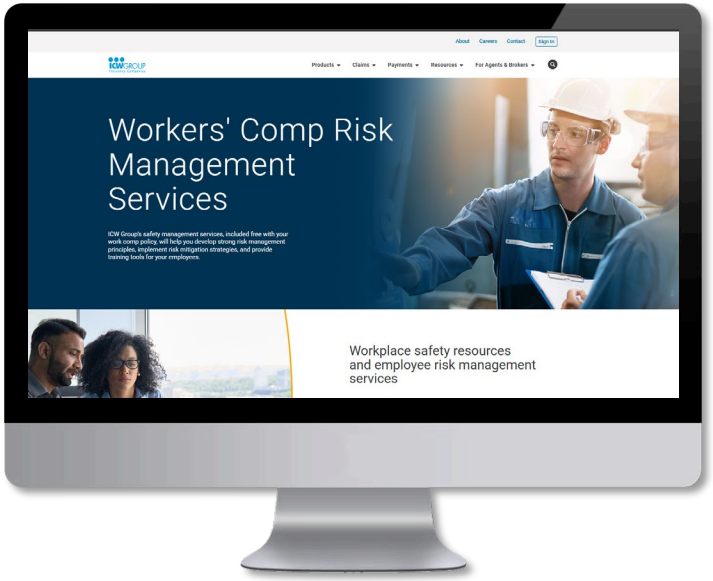
ICW Group Policyholder Website

Icwgroup.com/safety

- Go to Safety Webinars page
- Click on the topic to find a recorded version of the presentation, slide deck & resources

BONUS MATERIALS!

- List of Safety OnDemand® sprains and strains prevention materials



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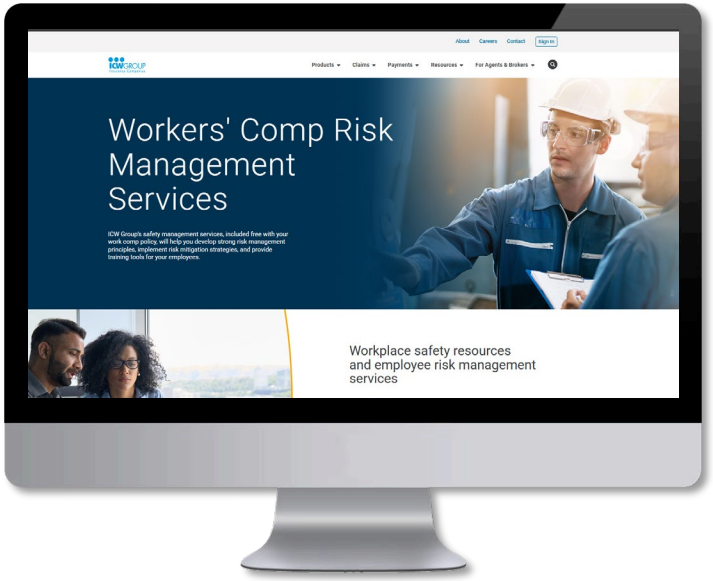
Safety *OnDemand®- Free with your Policy*

- Log into **MyResource**
  - If not registered, it's easy!
- **5000+ resources available**
- Materials in Spanish & English
- Start using it today!

Handouts, checklists, quizzes, safety talks and more!



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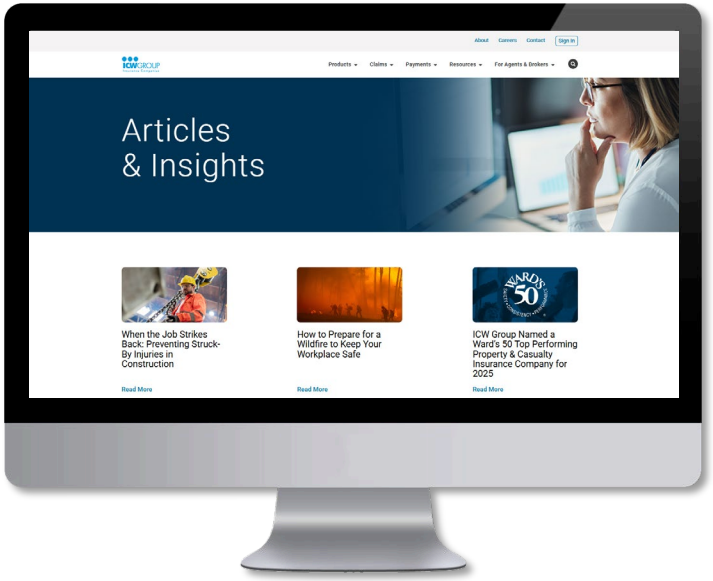
Articles & Insights

Blog.icwgroup.com

- Find more on sprains and strains
- Helpful articles on numerous safety topics, work comp fraud prevention and HR advice
- Written by ICW Group experts

Expert advice to keep your workforce safe, informed and thriving



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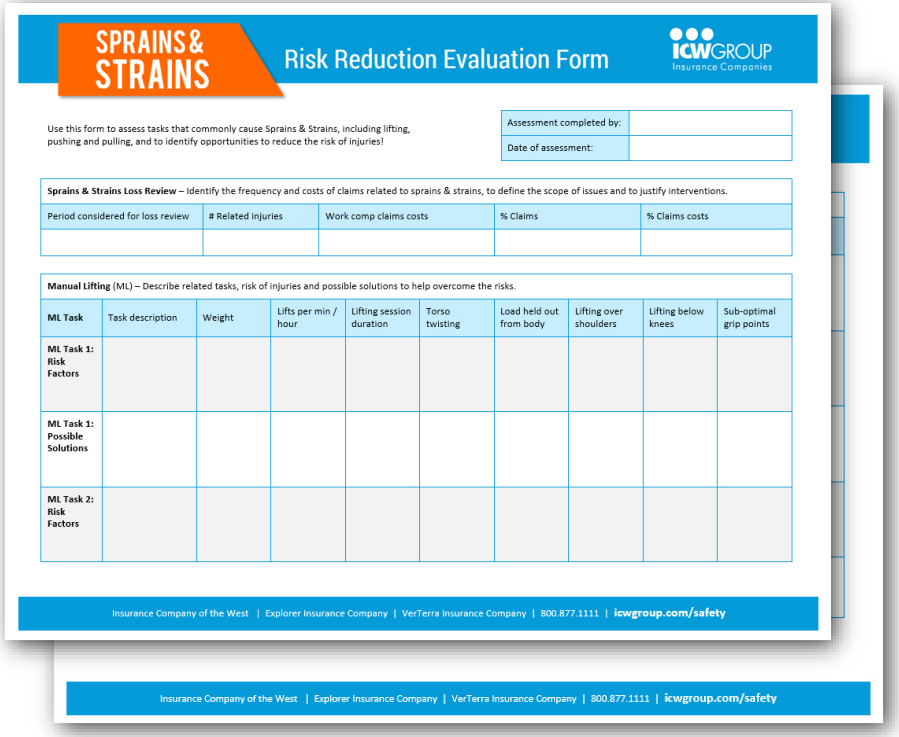
Sprains & Strains Risk Reduction Tool

- Assess tasks
- Identify risk factors
- Identify practical solutions



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Risk Reduction Evaluation Form

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Use this form to assess tasks that commonly cause Sprains & Strains, including lifting, pushing and pulling, and to identify opportunities to reduce the risk of injuries!

Assessment completed by:	
Date of assessment:	

Sprains & Strains Loss Review – Identify the frequency and costs of claims related to sprains & strains, to define the scope of issues and to justify interventions.

Period considered for loss review	# Related injuries	Work comp claims costs	% Claims	% Claims costs

Manual Lifting (ML) – Describe related tasks, risk of injuries and possible solutions to help overcome the risks.

ML Task	Task description	Weight	Lifts per min / hour	Lifting session duration	Torso twisting	Load held out from body	Lifting over shoulders	Lifting below knees	Sub-optimal grip points
ML Task 1: Risk Factors									
ML Task 1: Possible Solutions									
ML Task 2: Risk Factors									

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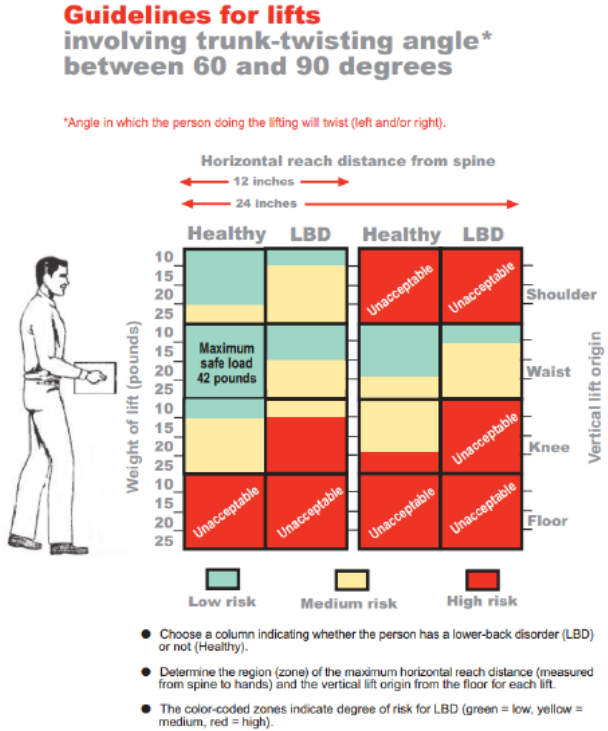
Available existing unused resources?

OHIO BWC Lifting Guide

- Created by Ohio Bureau of Workers' Compensation
- Guidelines for Healthy employees *and* those with previous lower back disorders (LBD) impairment
- Output to a look-up table
- http://www.ohiobwc.com/downloads/blankpdf/LiftGuideBackStudy.pdf



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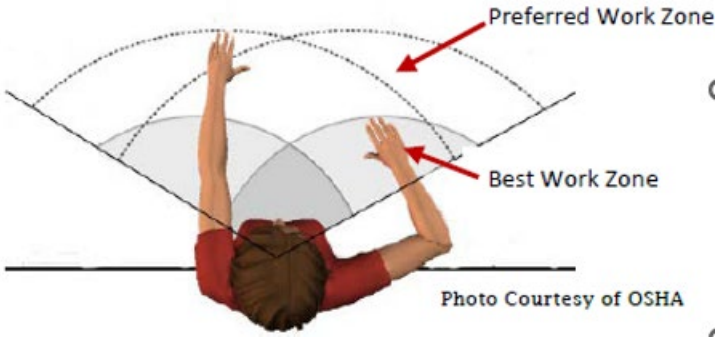
Designing seated workstations

- Consider the following tips when designing seated workstations:
  - Keep frequently used items within the best work zone. Forward reach should not exceed 14-18 inches
  - Keep all other work within the preferred work zone. Forward reach should not exceed 20-24 inches
  - Keep items within 45 degree reach to the sides
  - There should be ample leg room clearance to allow the worker to get close to the work surface
  - Provide a supportive, adjustable chair that is correct for the workstation and tasks. Make sure the chair provides back support.
  - Make sure there are not hard or sharp surfaces that press into wrists, forearms, thighs or knees.



QUESTIONS?

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THANK YOU!

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