Occupational Health Clinics for Ontario Workers Inc.

Centres de santé des travailleurs (ses) de l'Ontario Inc.

Ergonomics and Carpenters

Understanding Hazards and Developing Solutions

February 24, 2022

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OHCOW Sarnia Clinic

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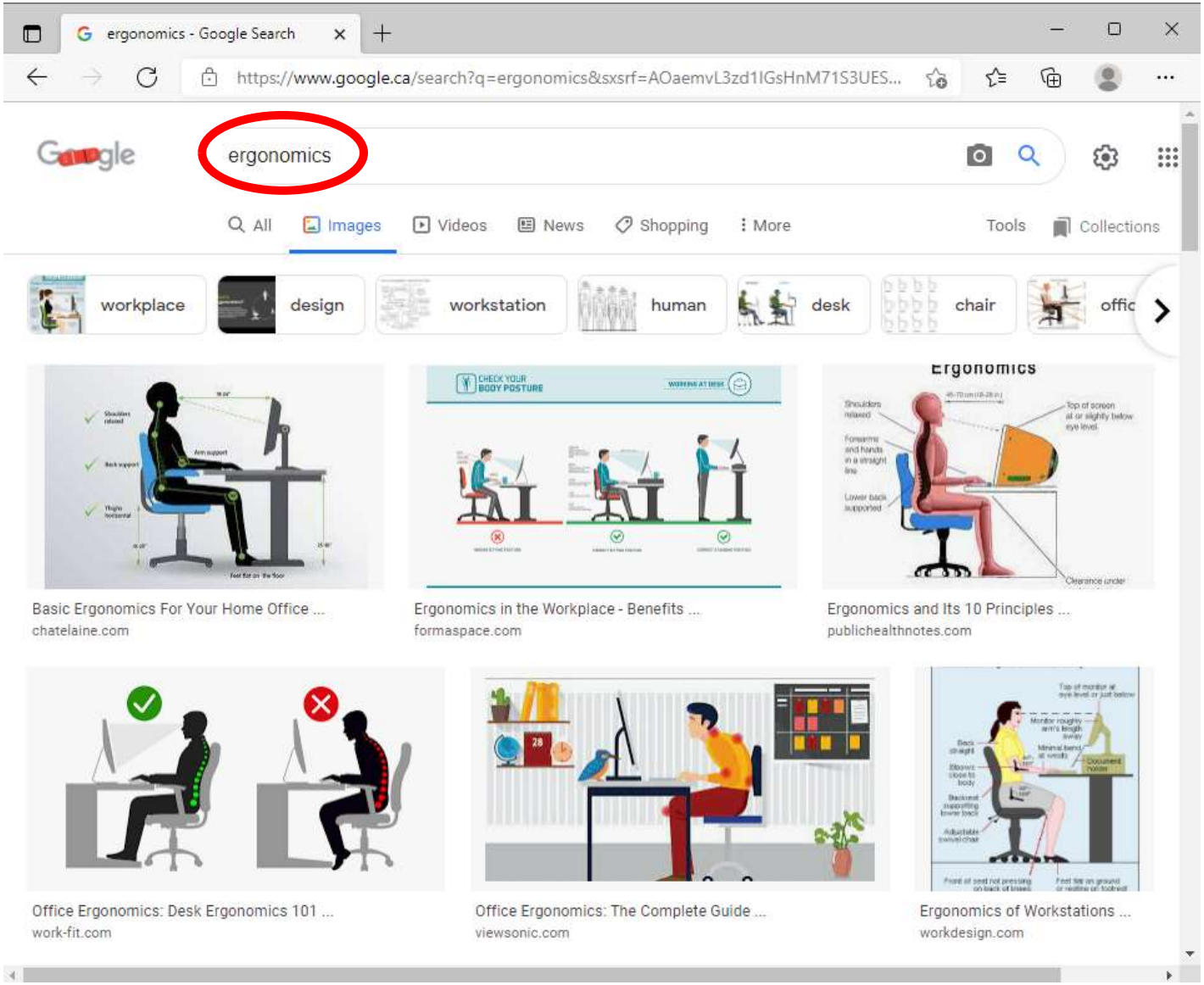
Summary

- Intro to Ergonomics
- The need for Ergonomics in Carpentry
  - Survey findings
  - Studies
- Musculoskeletal Disorders (MSDs) and Risk Factors
- Developing and Implementing Solutions
- Internal Responsibility System (IRS)
- Homework


ergonomics - Google Search
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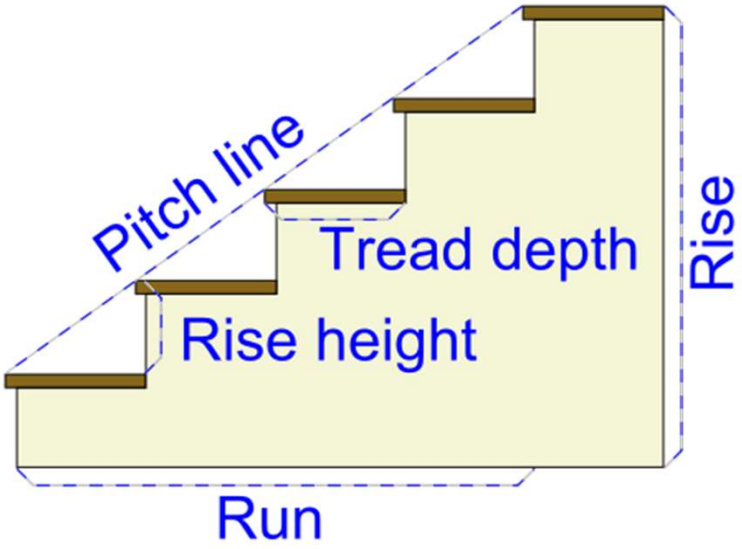
work-fit.com
Office Ergonomics: The Complete Guide ...
viewsonic.com
Ergonomics of Workstations ...
workdesign.com

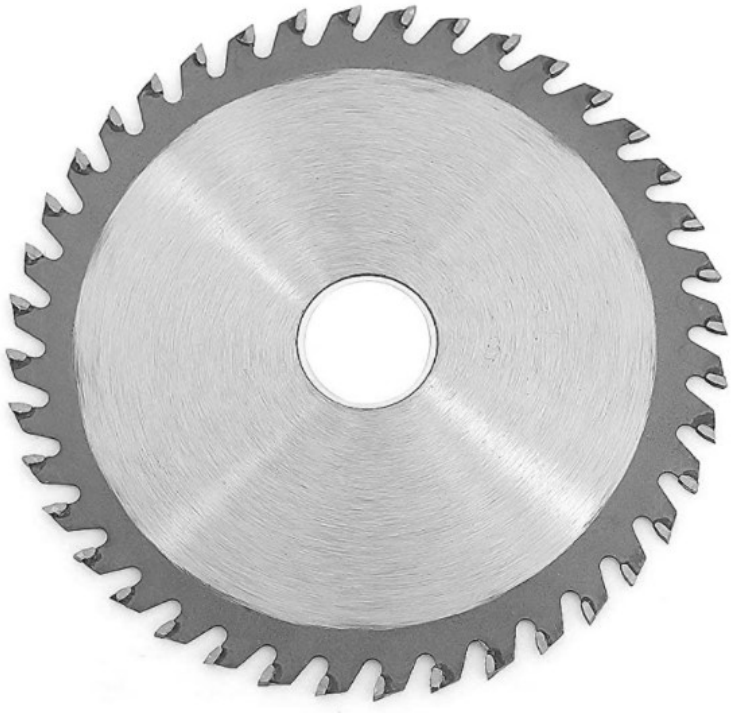
Ergonomics: *the study of the design of work in relation to the physiological and psychological capabilities of people.*



"Working smarter, not harder"

Image: https://www.shutterstock.com/search/empty+toolbox

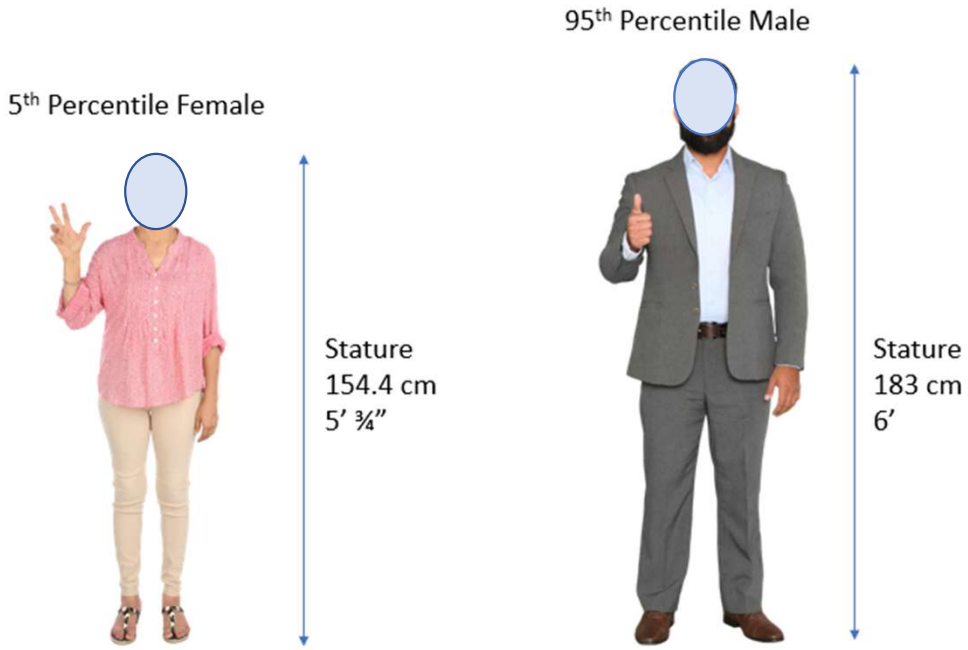
Ergonomic Approach



Proactive

Reactive

Anthropometrics



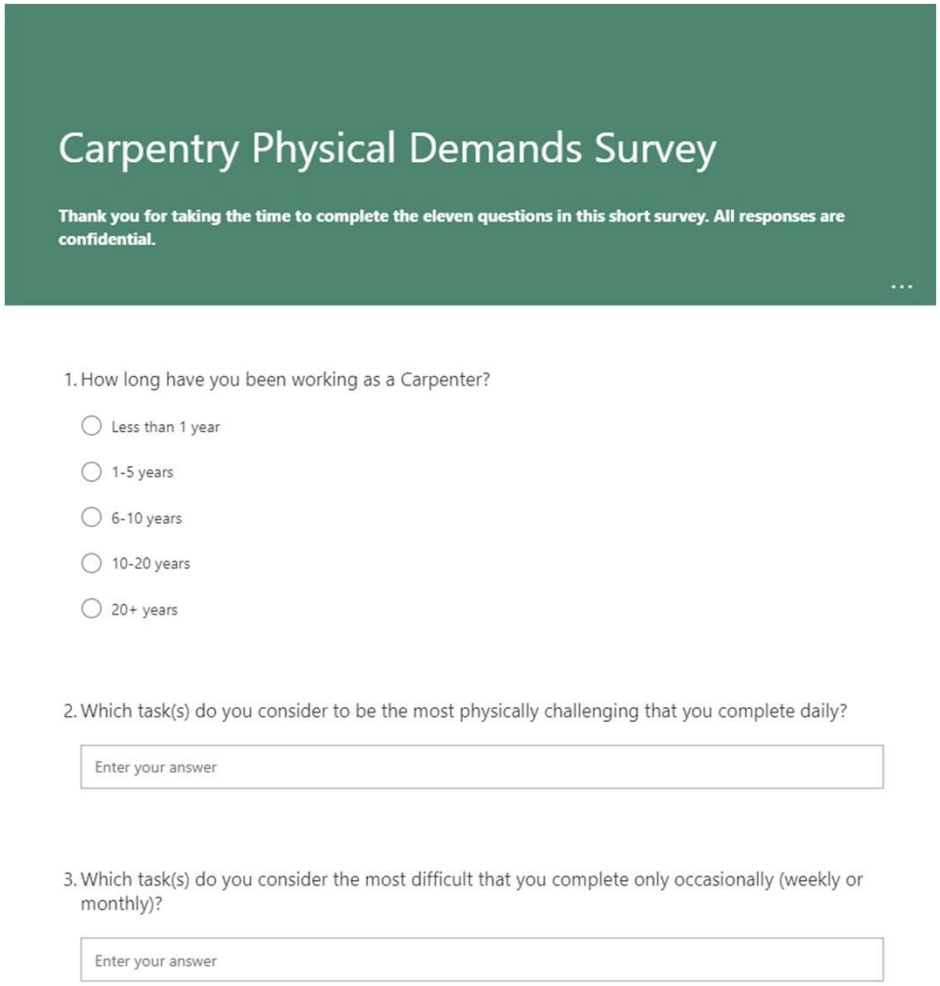
Anthropometry is the science that defines physical measures of a person’s size, form, and functional capacities.

Kodak’s Ergonomic Design for People at Work, 2004

Why Ergonomics?

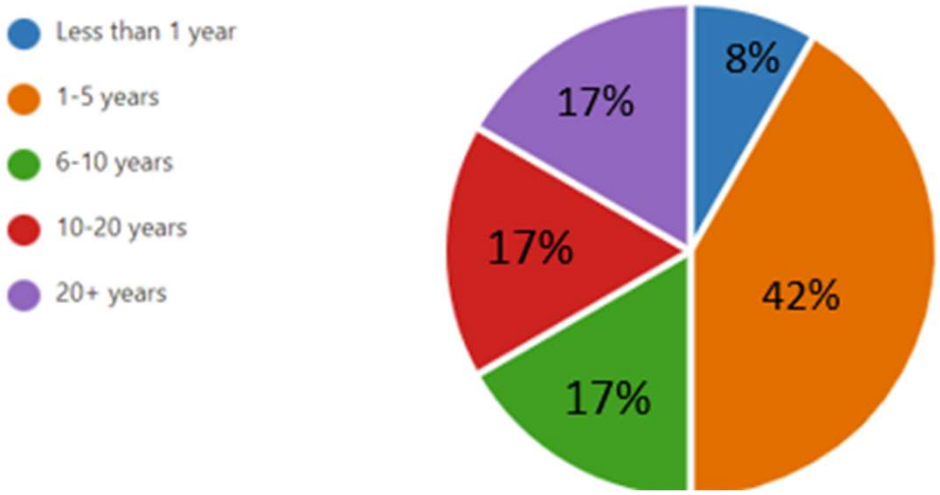
- MSDs represent over 40% of all lost time compensation claims in Ontario
- Construction industry is in the top 3 occupations for WRMSDs
- Construction industry is amongst the highest rate of lost time claims in Canada
  - Most common injury types: overexertion and sprains or strains

CCOHS, 2010
Ontario Ministry of Labour, 2016

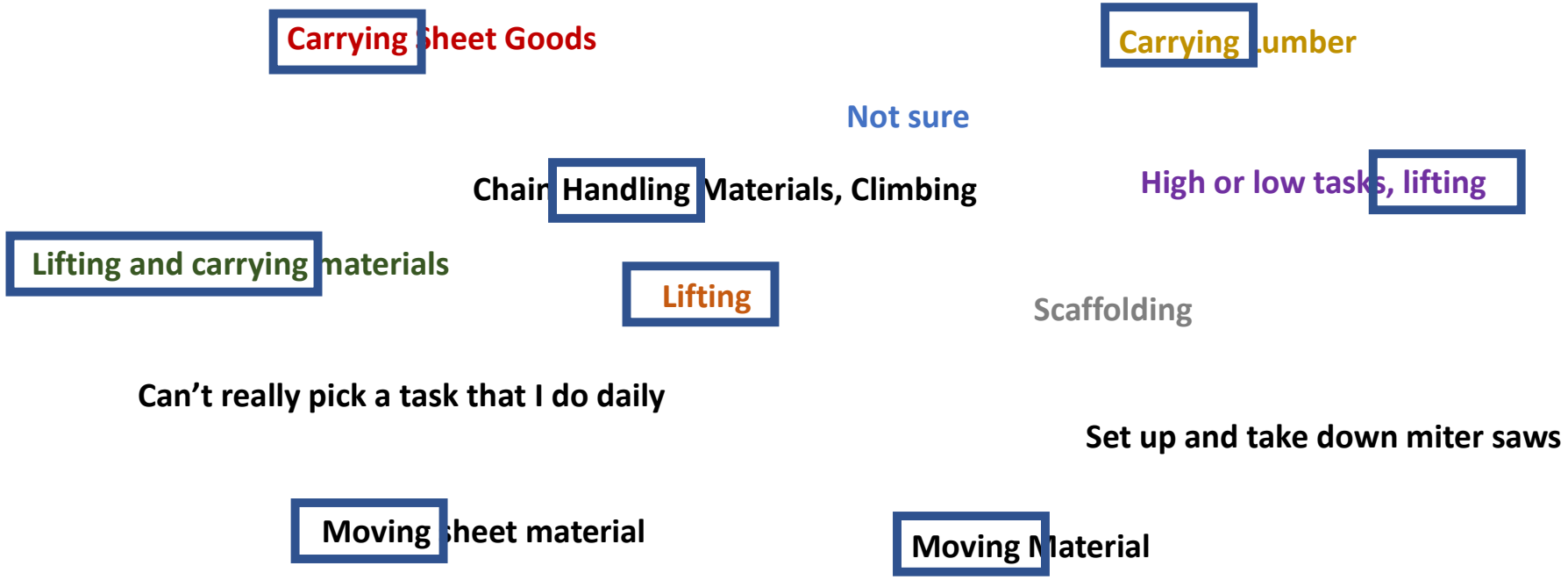


- Consisted of 11 questions
- Distributed to the survey to local Carpentry companies, Carpenters District Council of Ontario, Ontario Carpenters Union and the College of Carpenters and Allied Trades
- Not representative of all Carpenters because of the variety of work

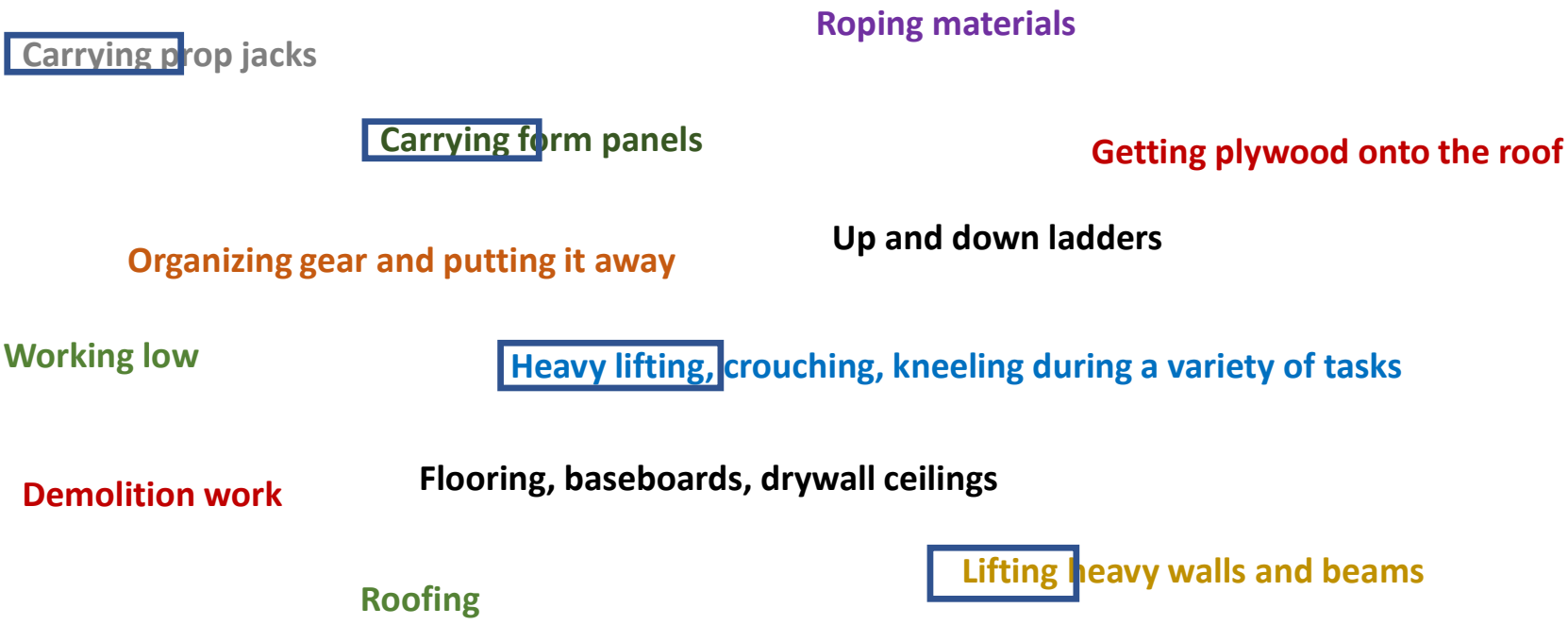
1. How long have you been working as a Carpenter?



2. Which task(s) do you consider to be the most physically challenging that you complete daily?



3. Which task(s) do you consider the most difficult that you complete only occasionally (weekly or monthly)?



4. On a scale of 1-10, how physically demanding would you rate your work? (1 being not physically demanding, 10 being extremely physically demanding)

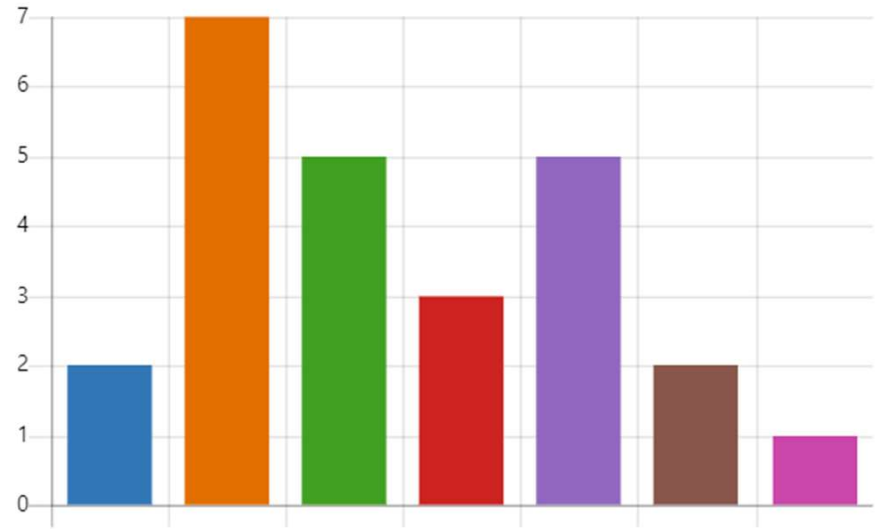
Avg rating: 6.17
Lowest rating: 4
Highest rating: 10

5. On a scale of 1-10, how much discomfort or pain do you experience on a regular basis? (1 being no pain or discomfort, 10 being extreme pain and discomfort)

Avg rating: 3.67
Lowest rating: 2
Highest rating: 8

6. In which region of your body do you experience pain or discomfort?

Neck / Upper Back	2
Mid / Lower Back	7
Upper Limb (Hands, Wrists, El...	5
Shoulders	3
Lower Limb (Hips, knees, ankl...	5
I do not experience any pain/...	2
Other	1



7. Which tool(s) do you use that cause(s) the most pain or discomfort?

tools during demolition

Hardwood floor nailer

Chipping Gun

Pry bars, demolition hammer

Harness

Heavy harnesses

Hammer drill

tools used for demolition

Not sure

Your body to carry gear

Hammer

8. Which tool do you use that is the most physically demanding?

Concrete Saw, post hole auger

Hammer

Chipping Gun

demolition tools

Jack Hammer

Rope

Ladders

Bars and chipping gun

Pry bar, hammer, flooring nailer

Pry bars, demolition hammer

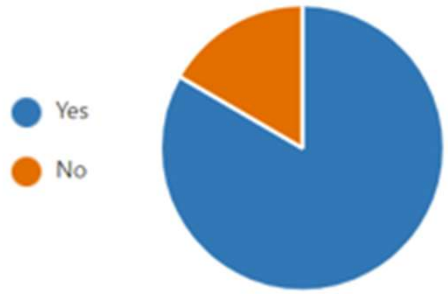
9. Does pain or discomfort cause you worry about the longevity of your career?

Yes: 42% No: 58%

10. Have you ever had any training specific to ergonomics?

Yes: 8% No: 92%

11. Do you believe that ergonomic training can reduce injuries or prevent injuries from occurring?



Yes: 83% No: 17%

Survey Summary:

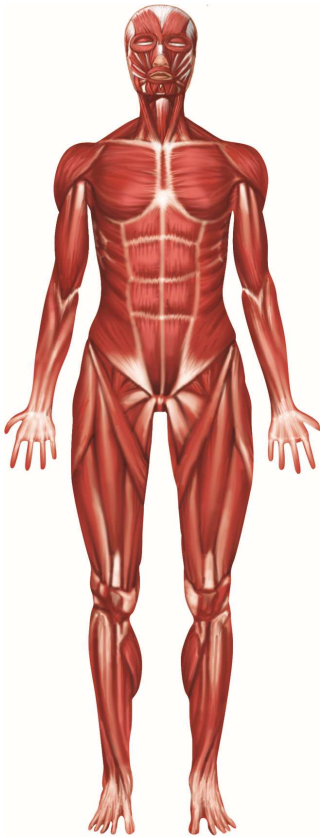
- Most respondents believe their work is very physically demanding
- Many respondents experience mild to moderate pain or discomfort
- Demolition tasks, Manual Material Handling, Working high or low
- Demolition Tools, vibrating tools, tools that require repetitive use
- Nearly half are concerned about the longevity of their career
- Only 8% had ergonomic training
- 83% of respondents believed there was value in ergonomic training

- ‘Assessment of Upper Extremity Postures in Novice and Expert during Simulated Carpentry Tasks’, -Ahmed and Babinski-Reeves (2012)

Workers 24 and Under

Photo: https://www.youworkforthem.com/photo/137584/young-carpenter-holding-a-builders-level

Musculoskeletal Disorders (MSDs)



Disorders that effect:

- Muscles
- Tendons
- Ligaments
- Nerves
- Bursa
- Blood vessels
- Spinal discs

Types of Musculoskeletal Disorders (MSDs)

- Sprains
- Strains
- Carpal Tunnel Syndrome
- Hand Arm Vibration Syndrome (HAVS)
- Tendonitis
- Disc Herniation
- Overexertion

MSD Hazards

- Force
- Posture
  - Awkward or sustained
- Repetition
- Contact Stress
- Hot or Cold Stress
- Vibration

MSD Hazards: Force

Photo: https://www.finehomebuilding.com/project-guides/framing/how-to-install-a-load-bearing-beam

MSD Hazards: Posture

Photo: https://careertrend.com/carpenters.html

MSD Hazards: Posture

Photo: https://carpentrycontractors.com/

Neutral Posture

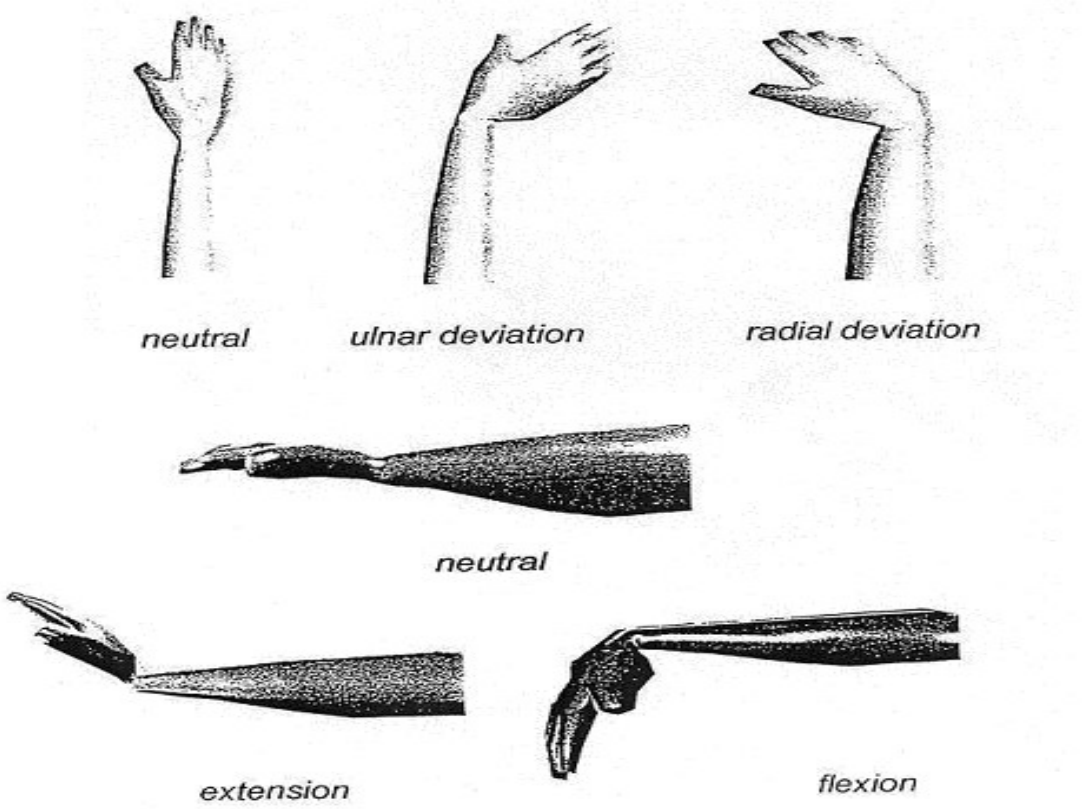


Photo: Kodak's Ergonomic Design for People at Work, 2004

Neutral Posture

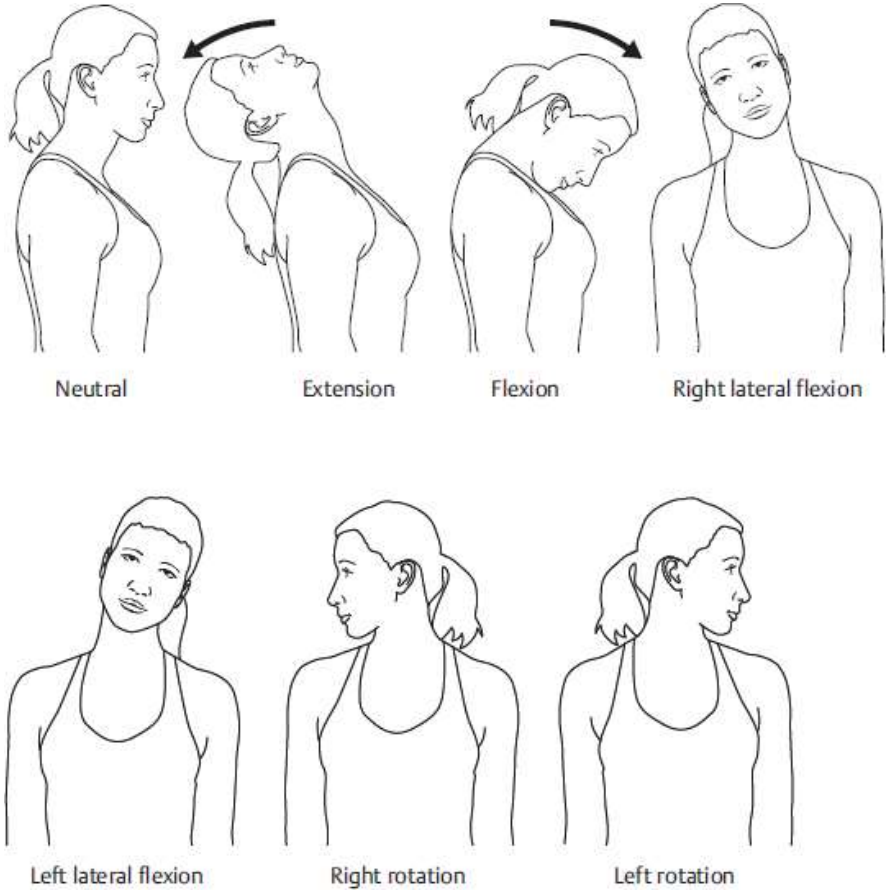
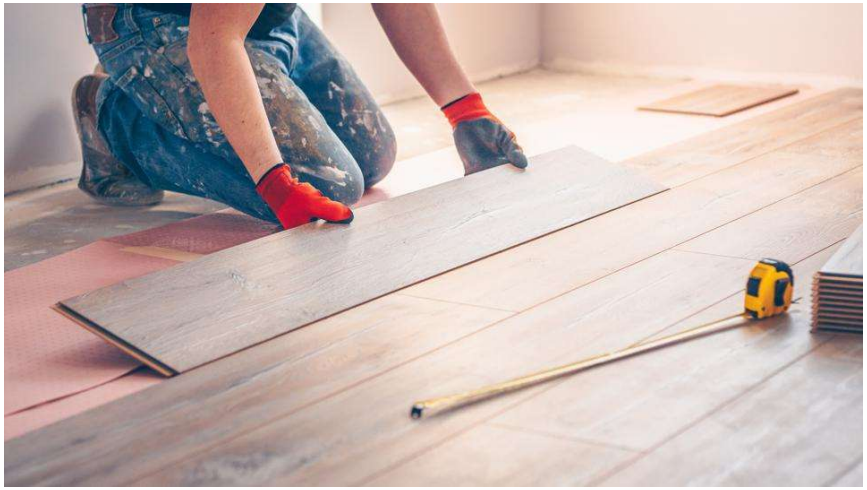


Photo: https://musculoskeletalkey.com/neck-assessment/

MSD Hazards: Repetition

https://www.dewalt.com/products/hand-tools/hammers-and-pry-bars/24-wrecking-bar/dwht55129

MSD Hazards: Contact Stress



MSD Hazards: Hot/Cold

MSD Hazards: Vibration

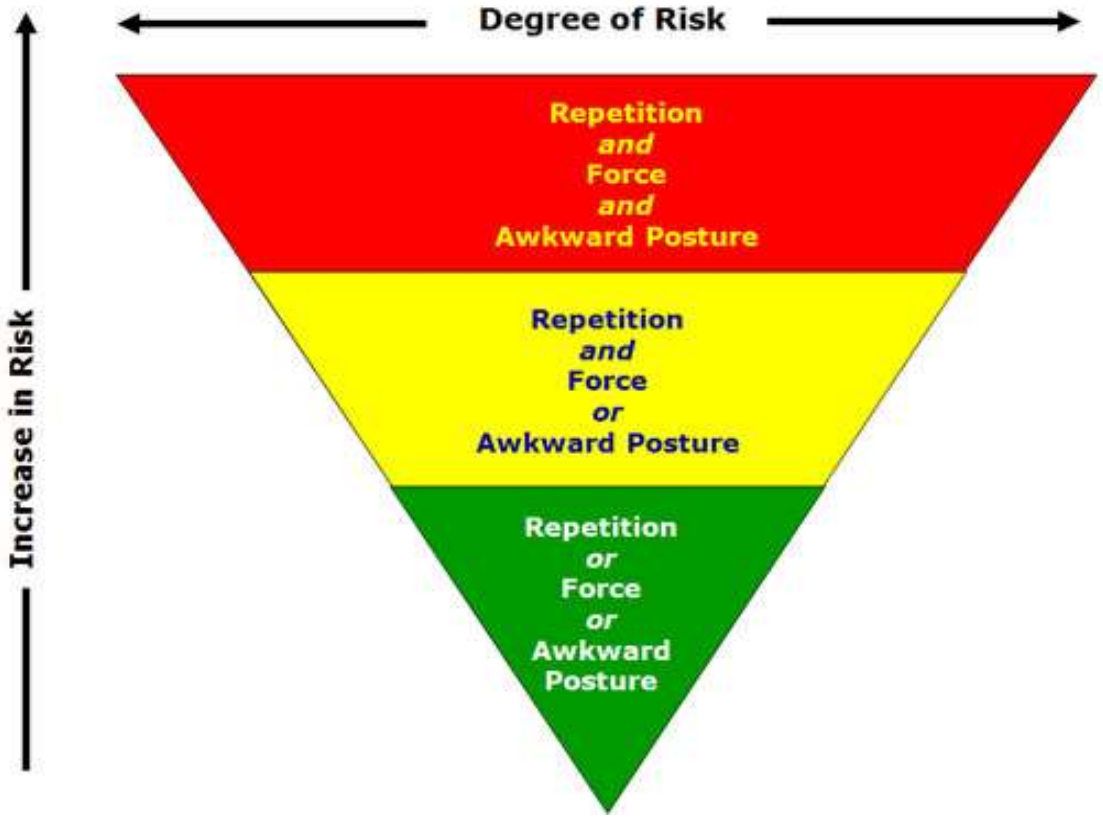
https://www.laserlevelhub.net/best-demolition-hammer/

MSD Hazards: Combination

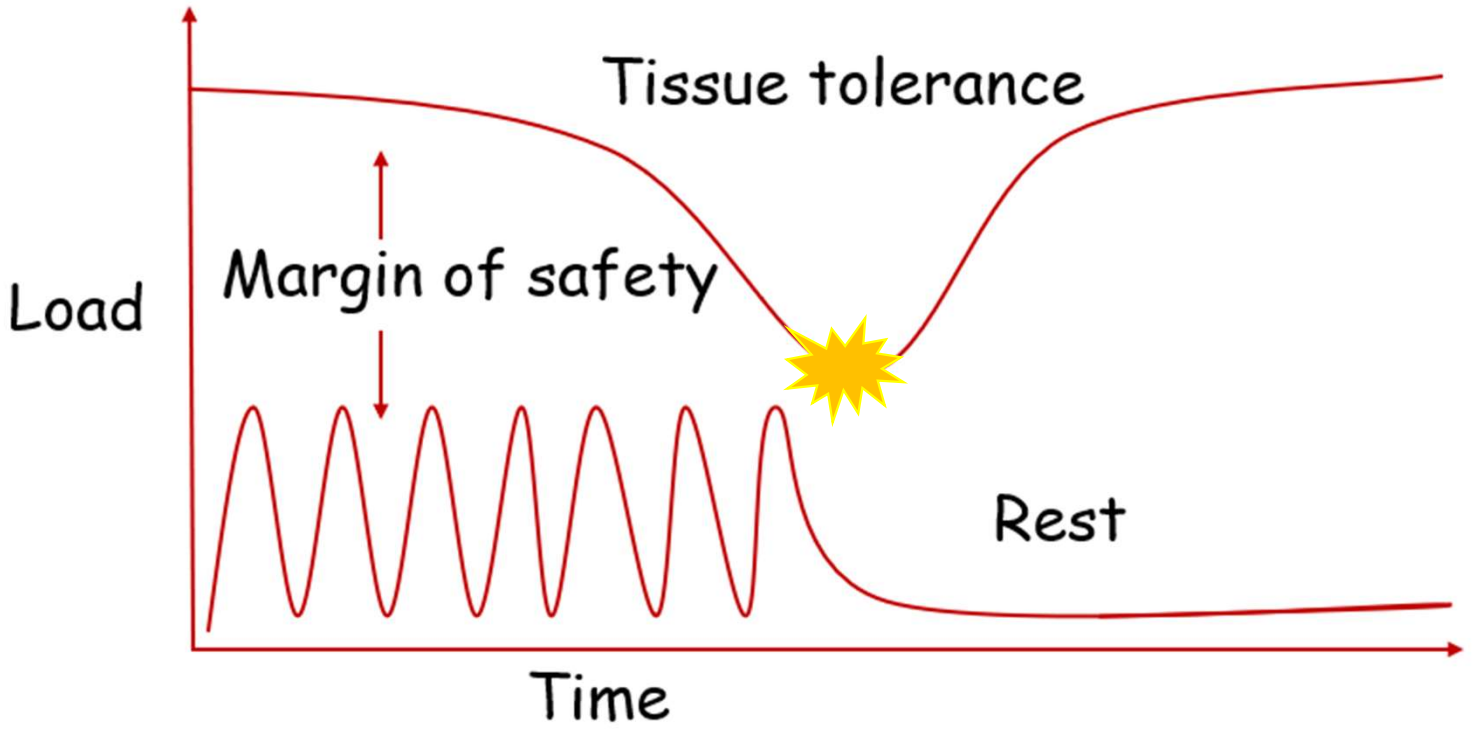
Photo: https://homeguides.sfgate.com/proper-sequence-installing-drywall-ceiling-wall-60437.html

Photo: https://www.nailgundepot.com/blog/installing-hardwood-flooring-faqs.html

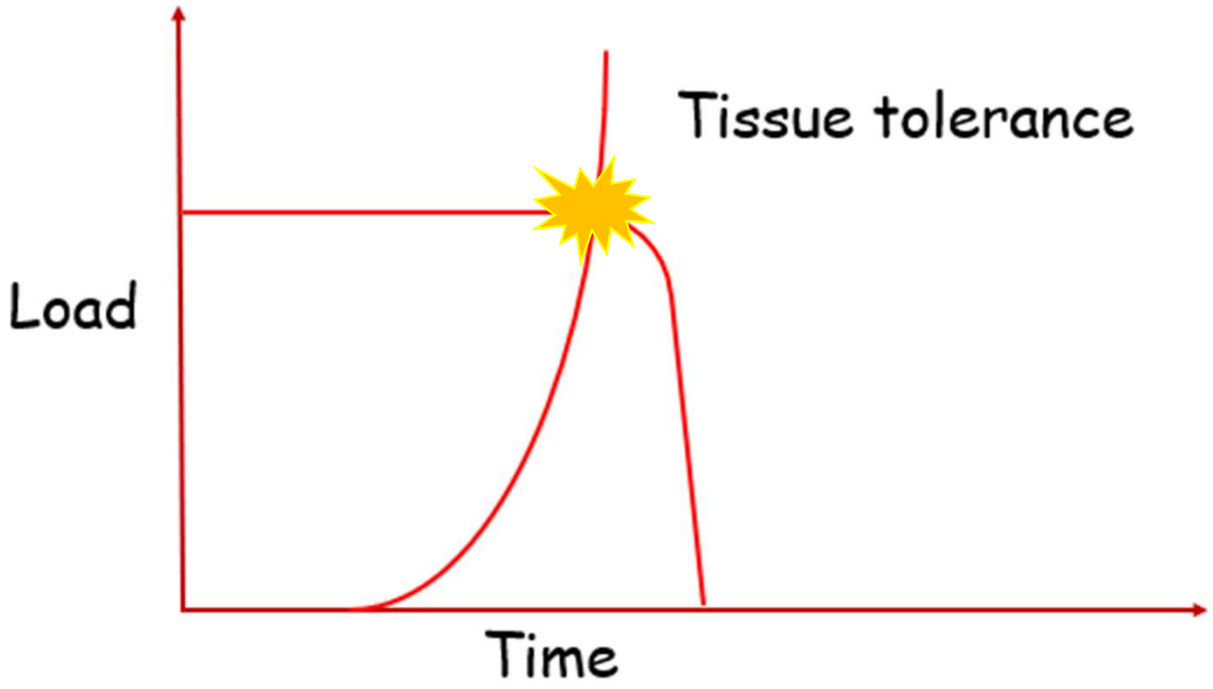
MSD Hazards: Combination



Chronic MSDs

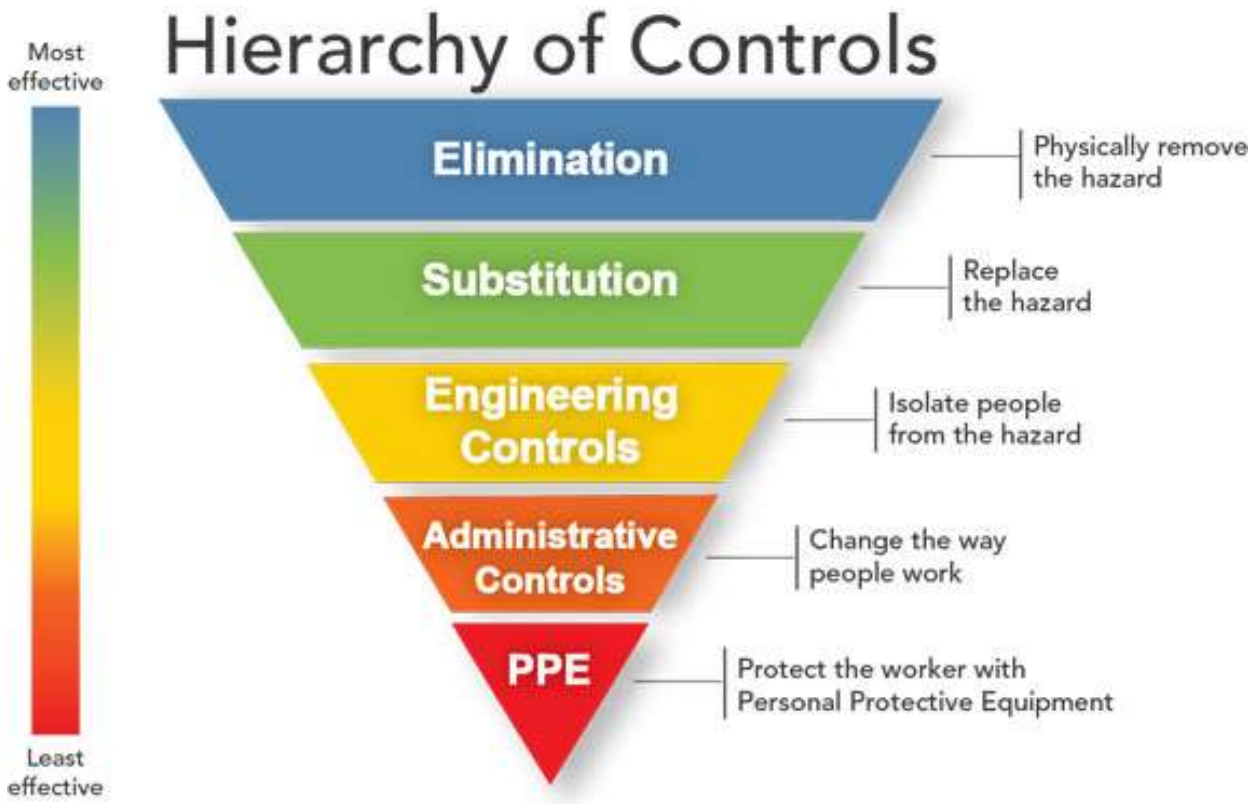


Acute MSD



Controlling MSD Hazards

https://www.sandoff.com/safety-tips-for-carpenters-and-woodworkers/



Source: https://www.cdc.gov/niosh/topics/hierarchy/default.html

Handling Sheet Materials

Elimination? ✖

Substitution? ✖

Engineering Controls? ✓

- Mechanical lifts, carts, gripping handles

Administrative Controls? ✓

- Implement lifting rules – team lift

PPE? ✖

Image: https://www.youtube.com/watch?v=xf0TsyT_Ixw

Flooring Work (Low Work)

Elimination? 🟡

- May be possible to assemble in neutral posture before installing?

Substitution? ✖

Engineering Controls? ✓

Administrative Controls? ✓

PPE? ✓

Images: https://www.homedepot.com/c/ab/what-to-expect-during-your-hard-surface-flooring-installation/9ba683603be9fa5395fab9030d9d4b1

Internal Responsibility System (IRS)

Employer

Supervisors

Workers

"Everyone in the workplace has a role to play in keeping workplaces safe and healthy"

https://www.ontario.ca/document/guide-occupational-health-and-safety-act/internal-responsibility-system

Summary

Outcome goals:

- Demonstrate the need for ergonomic training amongst Carpenters, in particular carpenters who are new to the trade
- Introduction to ergonomics
- Introduction to MSDs and hazards that can lead to the development of MSDs
- How to control hazards and implement changes in your workplace

Resources are Available

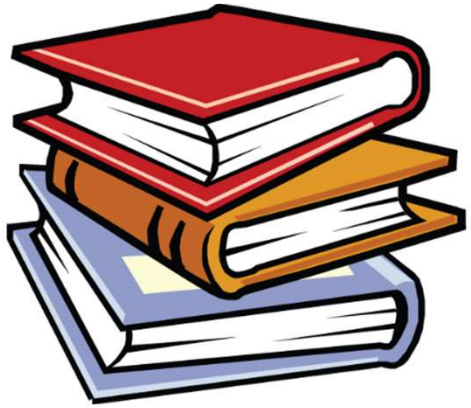
Photo: https://www.finehomebuilding.com/2017/08/18/working-tips-solo-carpenter

Homework

What tasks or tools are you aware of that you think could be improved?

Link to Survey:

- https://forms.office.com/r/bHPkhZUj8w



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Questions?

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