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Linking Safety with Savings: Prevention Strategies for Wholesale and Retail Employers

National Safety Council Webinar Production
January 17, 2012, 2:30 – 3:30 pm ET

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Consider



Safety is a core function delivering significant business & economic value: boosting productivity, efficiency, and the bottom line.

[Fortune 100 member]

Ninety-five percent of business executives report that workplace safety has a positive impact on a company's financial performance. [Liberty Mutual Executive Survey]

Purpose



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To present a
prevention strategy
for the Wholesale
and Retail Trade
(WRT) Sector

That focusses on
preventing
overexertion injuries
associated with
manual material
handling jobs

Letters of Agreement: Support OSH



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Webinar Outline



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- 1. Introduction & Purpose**
- 2. What is WRT and High-Risk?**
- 3. MMH Jobs and Injuries**
- 4. Cost of Overexertion Injuries**
- 5. Four Prevention Strategies- Unique to WRT**
- 6. One Strategy for Solving/Improving MMH**
- 7. Some Questions added at various places.**

WRT = Wholesale Retail Trade Sector
MMH = Manual Materials Handling

First: Clarifying Terminology About: Causes and Outcomes:



- **Causal Factors or Risk Factors:**
 - **Job Demands** refer to the job activities
 - How much, how hard, how long, etc.
 - **Work Capacities** refer to one's personal abilities
 - How strong, your motivation, age, experience, etc.
- **Adverse Outcomes or Injuries, Illnesses, Fatalities**
 - Defined by causal factors: Overexertion, Lifting, MMH
 - Defined by body system: MSD, Respiratory, Hearing, etc
 - Defined by the onset: Acute, Chronic, CTDs

MSDs = Musculoskeletal Disorders, alias: soft tissue disorders; overuse syndrome, overexertion

Question # 1

CFO = Chief Financial Officer

What is the CFO's view of the main benefit of workplace safety program?

- a. Avoiding OSHA
- b. Productivity increase
- c. Reduced costs
- d. Employee retention
- e. Employee morale

What is WRT and High Risk?

Wholesale/Retail Trade (WRT) Businesses



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See the smiling faces



Stock photos purchased

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Some facts about WRT

- 1.5 million establishments
- 146 distinct businesses
- Wide range of company sizes
- Women comprise 45%
- Growth sector for minorities
- Main occupations are sales and material handling
- Rapidly changing employment relationships impacts the “risk of injury”



What do we mean by Risk?

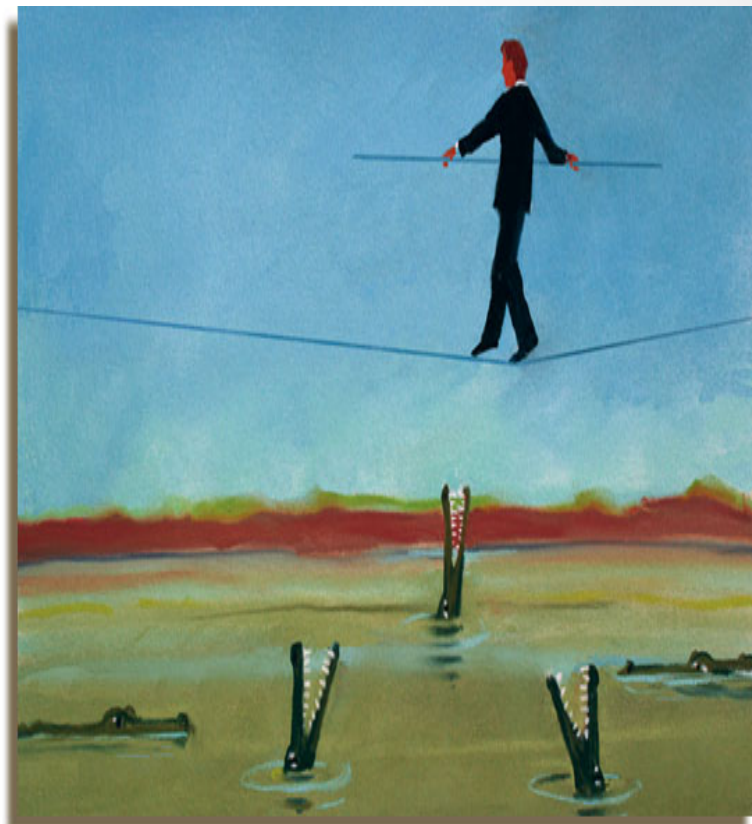
Risk Definitions:

Risk = Probability or potential for injury based on known job activities associated with injuries :

Pre injury metric

Risk = Probability or potential for an injury based on a previous history (records) of similar injuries in that business or industry:

Post injury metric



Risk Manager at Work

Conduct Survey: Workplace Hazards



Pre injury indicators



Manual Materials Handling Risk

Lifting/Lowering

Pushing/Pulling

Carrying/Holding

Bending/Reaching

Conduct Survey: Injury Records



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Post injury metrics



Occupational Fatalities, Injuries, Illnesses in Wholesale/Retail Sector, *American J. Industrial Medicine*, 2010, Anderson, Schulte, et al.

Bureau of Labor Statistics (BLS)



Injuries, Illnesses & Fatalities in Wholesale and Retail Trade A Chartbook: NIOSH Pub 2012-106

Risk Assessment Review: Surveillance Consists of the following:



- I. Conduct survey of worksite for job hazards.
[Use checklists and loss prevention experts]**
- II. Conduct survey of injury records for high rates
[Search Bureau of Labor Statistics (BLS) data]**

Product:

**List of high-risk establishments: See next slide:
“Wholesale & Retail high-risk establishments”**

High-risk industries, (BLS, 2009)

Total Recorded Cases (TRC) Incidence Rates (IR)/100 FTE



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NAICS		TRC #	TRC IR
	Private Industry 2009	3,277,700	3.6
42	Wholesale (whs)	185,900	3.3
4248	Beer, wine, distilled alcoholic beverage merchants whs	12,400	7.7
4244	Grocery and related- product merchant whs	39,500	5.4
4233	Lumber and other construction materials merchants	10,200	4.8
4235	Metal and mineral (except petroleum) merchant whs	6,400	5.2
4231	Motor vehicle/motor vehicle parts/supplies merchants	13,200	4.4
WRT	42 & 44-45	673,100	NC

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High-risk industries, (BLS,2009)

Total Recorded Cases (TRC) Incidence Rates (IR)/100 FTE



NAICS		TRC #	TRC IR
	Private Industry 2009	3,277,700	3.6
44-45	Retail	487,200	4.2
4529	Other general merchandise stores	67,000	5.5
4451	Grocery stores	102,500	5.5
4441	Building material and supplies dealers	52,600	5.4
4411	Automotive dealers	38,600	3.8
4521	Department stores	50,500	4.9
WRT	42 & 44-45	673,100	NC

Question # 2



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What is the one job activity or task that is performed most often by employees in the high-risk establishments?

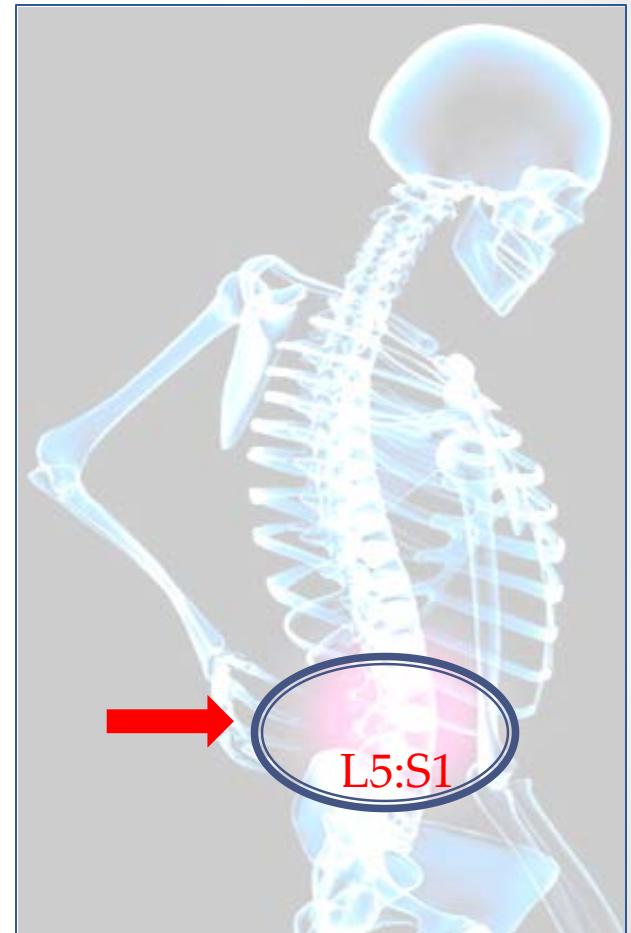
- a. Prolonged standing from sales work
- b. Repetitive motion involving stocking shelves
- c. Lifting and carrying materials
- d. Checking out customers involving repetitive scanning motions.
- e. Waiting on customers resulting in stress and fatigue.

What is MMH and overexertion injuries?

What is it about manual material handling that causes so much concern?



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Examples: Six high-risk MMH jobs



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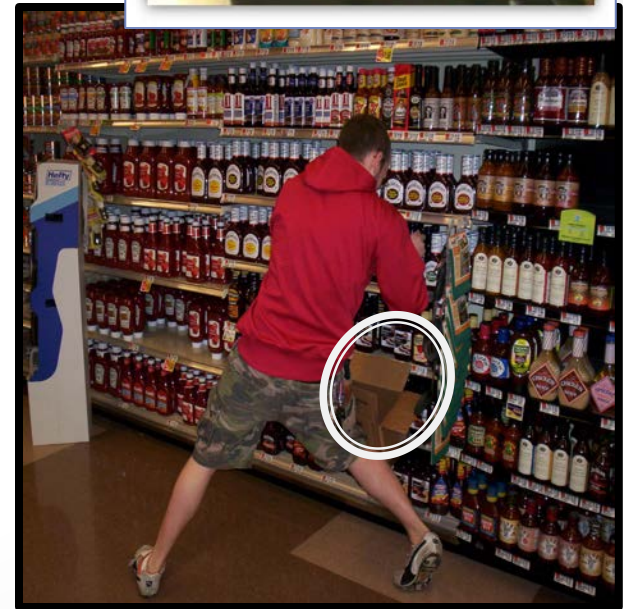
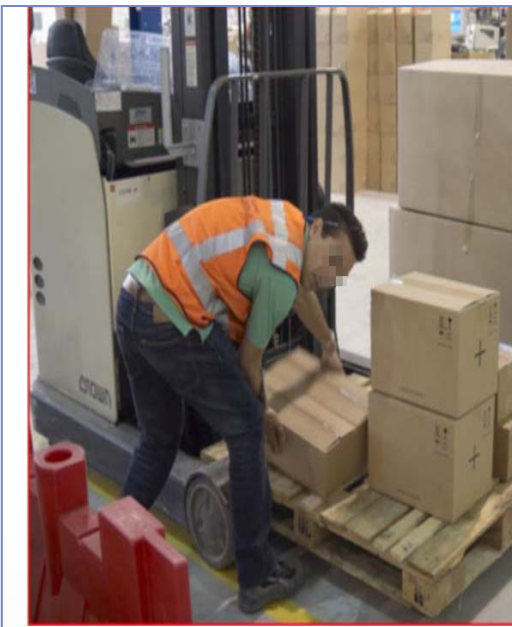


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Examples: Six high-risk MMH jobs



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Lift, carry, lower [40 lb milk case]



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Data on nature/extent

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Manual materials handling (MMH) in superstores: The Task Demands



- MMH are performed 74% of the work shift duration (7.5 hr)
- Stockers perform an average of 200 handling operations per shift, >400 in produce sections
- Total average weight 4,400 to 10,000 lbs/shift [22 – 50 lbs]*
- Pallet jack used average of 54 times/shift & accounted for 16% of time, maintenance issue
- Order pickers average 240 handling/hour at average weight 31 lbs* which equals ?
 - [55,800 lbs or 28 tons]

M. St-Vincent et al, 2005

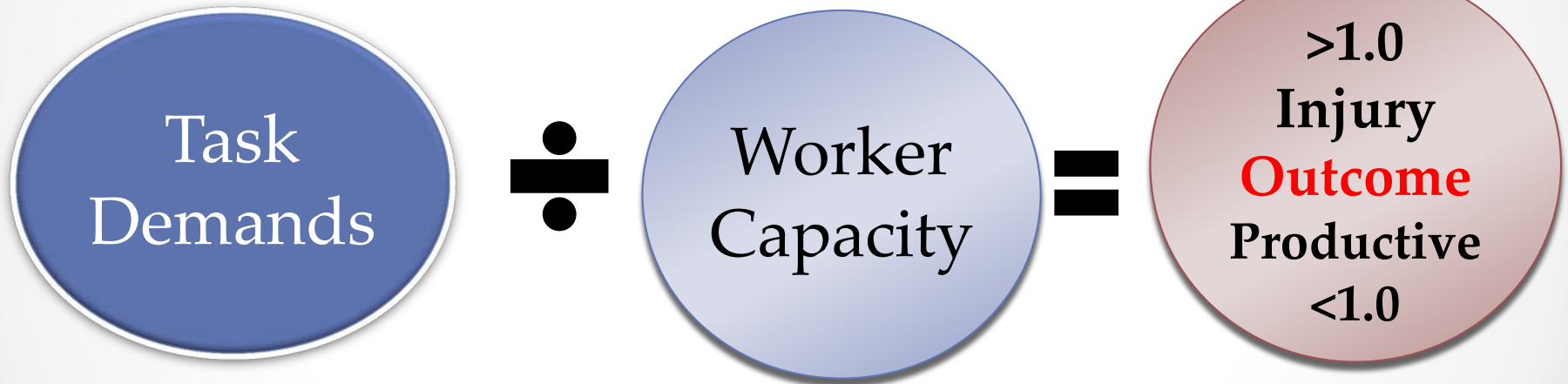
Putz-Anderson et al, 1993

Simple Injury Model: MMH



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50 lb	÷	35 lb	= 1.43 injury risk high
25 lb	÷	35 lb	= 0.73 injury risk low



If Task Demands Exceed Worker Capacities,
Outcome is an Increased Risk of Injury

Overexertion injuries (also MMH)

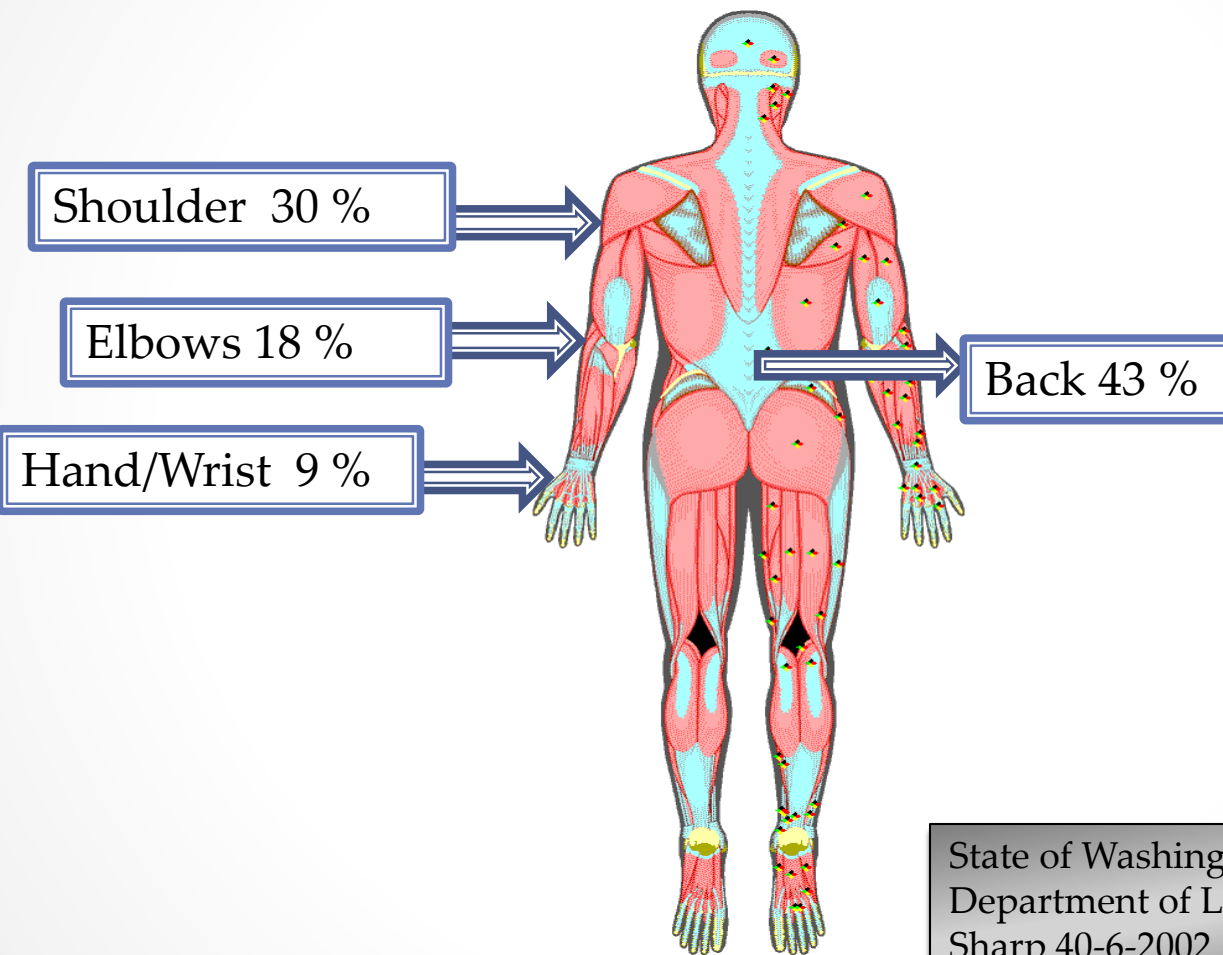


- **Sprains/strains—muscles, ligaments, tendons**
- **Chronic pain affecting joints**
- **Disc injuries of back or neck**
- **Compression peripheral nerves**
- **Compression or disorders of blood circulation”**



Putz-Anderson,
CTD Manual, 1988

Injuries: linked to MMH jobs



State of Washington
Department of Labor Study,
Sharp 40-6-2002

Overexertion Injuries and jobs, 2009



- **1 million reported injuries with lost time.**
- **1/4 million reported overexertion injuries.**
- **1 of every 4 were employees who had jobs in transportation and manual materials handling jobs had an overexertion injury.**
- **7 out of every 100 retail employees who had jobs in sales employees had an overexertion injury [BLS, 2009; Table R12].**

Overexertion injuries (OXIs) are prevalent despite our aversion to them: Some findings



- **BLS report that every third injury in which there are “days away from work” is an OXI (BLS, 2009).**
- **Wholesale and retail employees experience OXI more often than any other work population -with the exception of health services (BLS, 2009).**
- **Material movers/transportation occupations have highest frequency of OXIs and they are employed in the wholesale/retail trades (BLS, 2009).**
- **Employees age 25-54 have highest rates of OXIs in comparison to all other age groups, including those 55-64 yrs (BLS, 2009).**

Question # 3



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CFO = Chief Financial Officer

CFO Survey:
What is the
number one
cause of WC
loss?

- a. Highway accidents
- b. Repetitive motions
- c. Bodily reactions
- d. Fall on same level
- e. Overexertion

Economics & Cost
of Injuries

Occupational Injuries and Economics

Consider the following:



- **Occ. injuries/illnesses are always a matter of *economics* since work is an economic activity.**
- **The cost of injuries depends on the extent to which workers are viewed by management as *assets*.**
- **There is a cost associated with prevention and a cost associated with the consequence of an injury. Which cost is greater?**

[Dorman, ILO, 2000]

National Safety Council Injury Facts, 2011



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- Overexertion is the third leading cause of injuries, accounting for about 3.3 million ER visits.
- Overexertion was claimed as the cause of LBP by over 60% of LBP patients.
- Two thirds of Overexertion claims involved lifting.
- One fifth of Overexertion claims involved pushing or pulling loads.



According to Injury Facts, based on 2008 data.

Unloading Truck: Example Supervisor helping new worker



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Case study: Back Injury



- **Supervisor suffered back injury helping worker unloading a truck early 2004**
 - Original injury - \$2,000 medical costs: diagnosis treatment
 - Recurrence in 2005 cost medical plus lost time \$5,000
 - Surgery/comp in 2006 cost \$18,400 and resulted
- **Permanent partial disability**
 - Additional costs of \$84,400 in 2008 alone
- **By 2010, this same back injury cost \$97,000**
- **What would have been the cost of prevention?**

SALES TO COVER COSTS

Accident Costs ↓	1% Profit	2% Profit	3% Profit
\$ 1,000	\$ 100,000	\$ 50,000	\$ 33,000
\$ 5,000	500,000	\$250,000	167,000
\$ 10,000	1,000,000	500,000	333,000
\$ 25,000			
\$100,000			

It is necessary to sell an additional \$250,000 in products or services to pay the cost of \$5,000 annual losses



Review: Costs of Overexertion Injuries (OXI)



- **Median number of lost work days**
 - 5 days for all workers with any injury
 - 25 days for workers with OXIs
- **Average cost per injury**
 - \$1,100 for all other cases
 - \$10,800 for an OXI.
- **OXIs tend to have**
 - Longer durations
 - Longer treatment time
 - Greater work disability



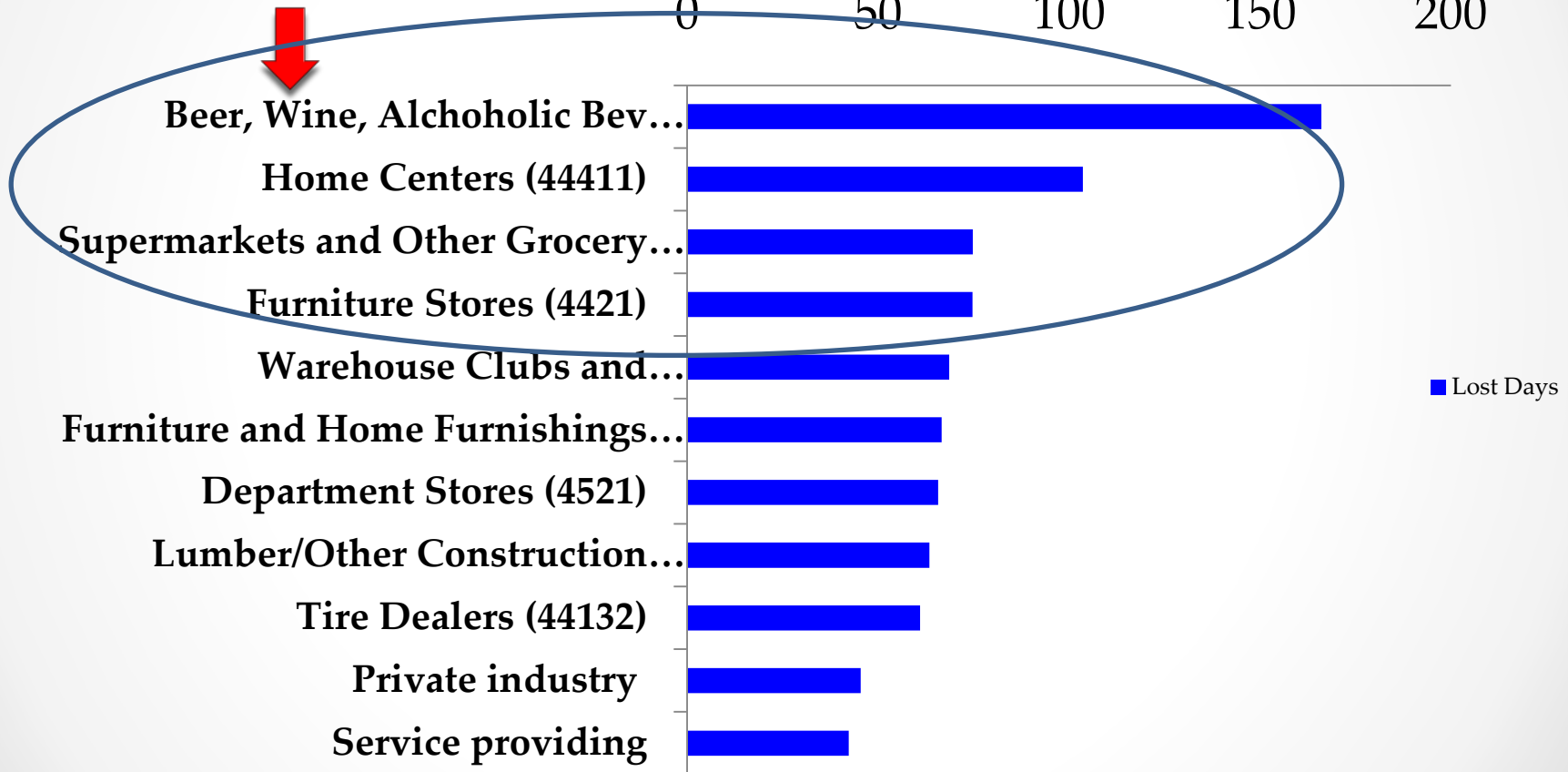
Businesses with manual material handling (overexertion) injuries



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Lost work days \$\$

0 50 100 150 200



Question # 4

What is the best solution to the MMH issues we have outlined here?

- a. We need to improve the selection of workers
- b. We need to start a wellness program
- c. We need to change the design of work.
- d. We need to improve our work incentives.

Prevention strategies



Employers' Prevention strategies

Why they do safety:



- 1. Cost of workers' compensation insurance**
- 2. Right thing to do**
- 3. Increases profitability**
- 4. Federal/State safety rules**
- 5. Too many accidents**
- 6. Employee morale**
- 7. Productivity**
- 8. OSHA fines**
- 9. Recommendations of outside experts**
- 10. Because of employee concerns**

Survey RILA 2002

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Occupational H-S Prevention Strategies alias: Hierarchy of Controls

- I. Selection and Testing Strategy**
- II. Personal Protective Equipment**
- III. Establish Safe Work Practices**
- IV. Prevention through Design**

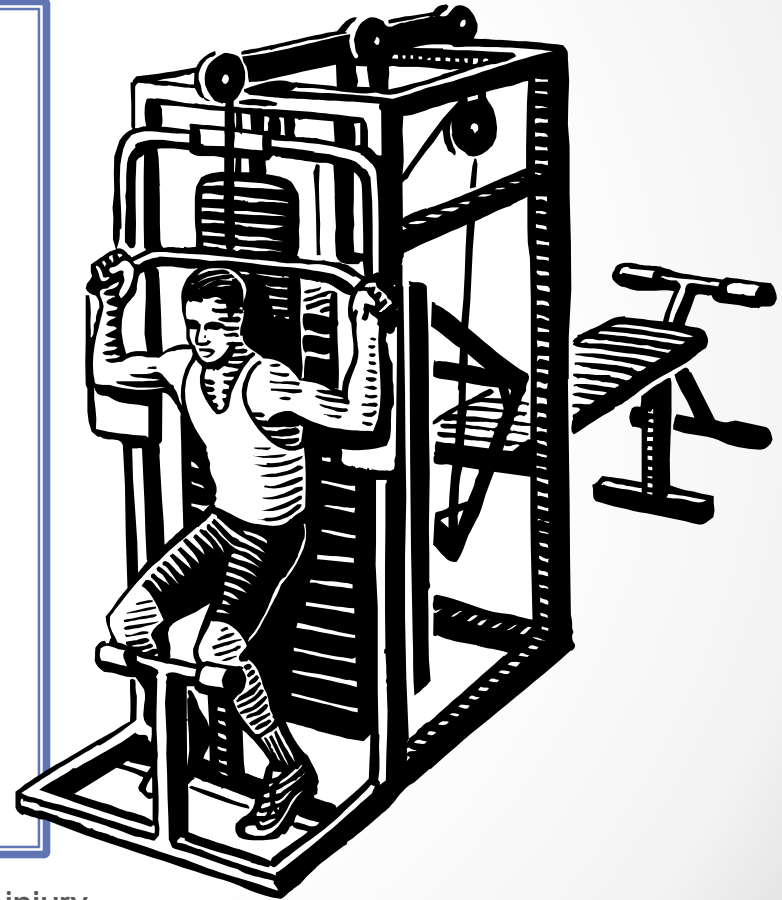
I. Strategy: Selection and Testing

Goal is to identify “injury resistant” workers who can perform heavy MMH.

Reality: Success rate is about 50:50 in selection

Numerous studies showing difficulty.

Some issues of discrimination.



A job severity index for the evaluation and control of lifting injury.
Liles DH, Deivanayagam S, Ayoub MM, Mahajan P. 1984 Human Factors

II. Use Personal Protective Equipment (PPE) [Gloves/Shoes]



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- Remember the infamous “back belt ” that made you feel strong when wearing it? Well...
- This PPE called the “Cyber-bionic exoskeleton” will increase your lifting capacity by a factor of ten.
- Unfortunately, it is too expensive for industrial use, but the military is interested.

III. Establish Safe Work Practices



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Set up Training and set Policies

- **Administrative controls can be useful.**
 - **Training in manual handling also useful.**
 - **However, “training to lift properly” is impossible in real work settings, based on numerous studies.**
- **No evidence that back injuries could have been prevented by using “proper” lifting techniques Kuorkinka, et al., 1994.**
 - **Recent studies have shown that “overexertion injuries” are “training-resistant” Waehrer & Miller, 2009**

IV. Prevention through Design



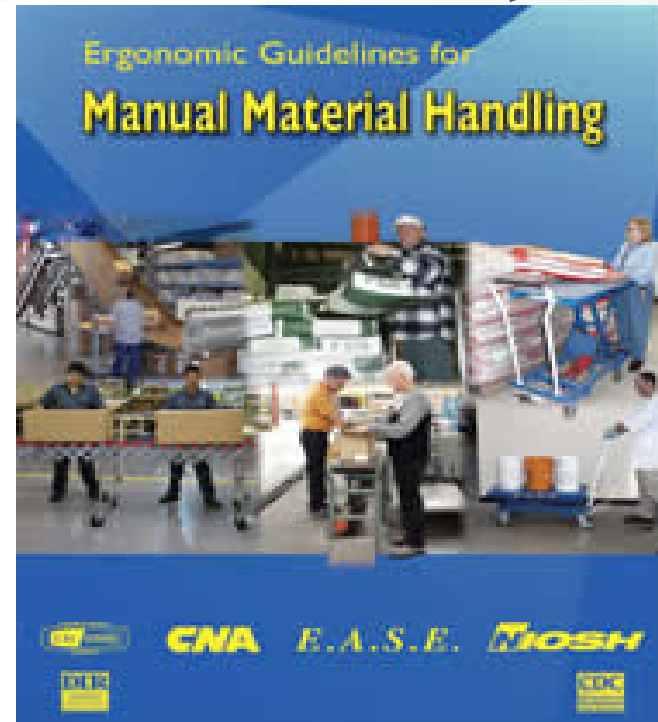
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Design Material Handling Assist Devices



Use engineering approach to reduce or eliminate the hazards

The engineering approach offered here is the topic of the MODEX & MMH Workshop



Examples of Engineering Controls NIOSH Publication No 2007-131

Engineering Design Goals (PtD):



Workshop Attendees will be seeking ways to accomplish the following:

Lower unit material handling costs:

- **Purchase equipment that will reduce the number of handlings and the distance moved.**

Lower risk of overexertion injuries:

- **Purchase equipment that will allow employees of any size or age to efficiently move and store bulky/ heavy merchandise .**



A Business to Business Meeting Workshop

**The MMH Workshop will focus on
designing and developing
Engineering Solutions to Manual Materials
Handling Jobs**

**A unique opportunity to meet and talk
with innovative design engineers.**



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The MMH Workshop: A Business to Business Workshop/Meeting



Manual Materials Handling Workshop: Sponsors



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Registration Site



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www.MODEXShow.com

<http://www.modexshow.com/education/mmhworkshop.aspx>

Register now: Hotels in area are already sold out

MMH Workshop Details



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- **When:** February 8 and 9, 2012
- **Where:** Georgia World Congress Cntr, Atlanta
- **Format:** Panel Discussions with Experts
- **Registration – Now! Hotels: Many Sold Out!**
<http://www.modexshow.com/education/mmhworkshop.aspx>
- **Registration Fee:** \$250
- **More Information:** Vern Putz Anderson
513 533-8319 vep1@cdc.gov
- **Attendees:** Loss Prevention & Safety Experts

My thanks to the National Safety Council for hosting today.



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Addendum: Risk Analysis



Explained:

- **Risk Analysis serves to define and identify the measures of risk control.**
- **Risk Analysis is an important step in the process of risk control and industrial safety.**
- **Risk Analysis = Risk Control**