



Institute of Industrial Engineers



Best Practices in

Ergonomics

Applied to Retail & Distribution

WELCOME !

Gaining Efficiency in Retail Stocking



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Established 1945

Non-profit Trade Assoc.

\$150 Billion Market

19 Industry Groups

Over 750 Members

24 ANSI Standards

Two Major Trade Shows



9 Member Companies

15 Industries/technologies

Ergonomic Resources and Tools

News

Case Studies

Checklists and Technical Support

White Papers

Speakers and Presentation Materials

Workshops and Outreach to the user



MISSION

To broadly promote the benefits of ergonomic assist systems and equipment together with the advantages derived from the use of this equipment in the workplace and to promote the safety and health of the work environments.



**COLLEGE-INDUSTRY COUNCIL
ON MATERIAL HANDLING EDUCATION**

South Dakota School of Mines

Ohio University

Tel Aviv University

University of Arkansas

University of Louisville

Universite Laval

Virginia Tech

State University of New York

Clarkson University

Georgia Tech

Auburn University

University of Tennessee

Georgia Southern University

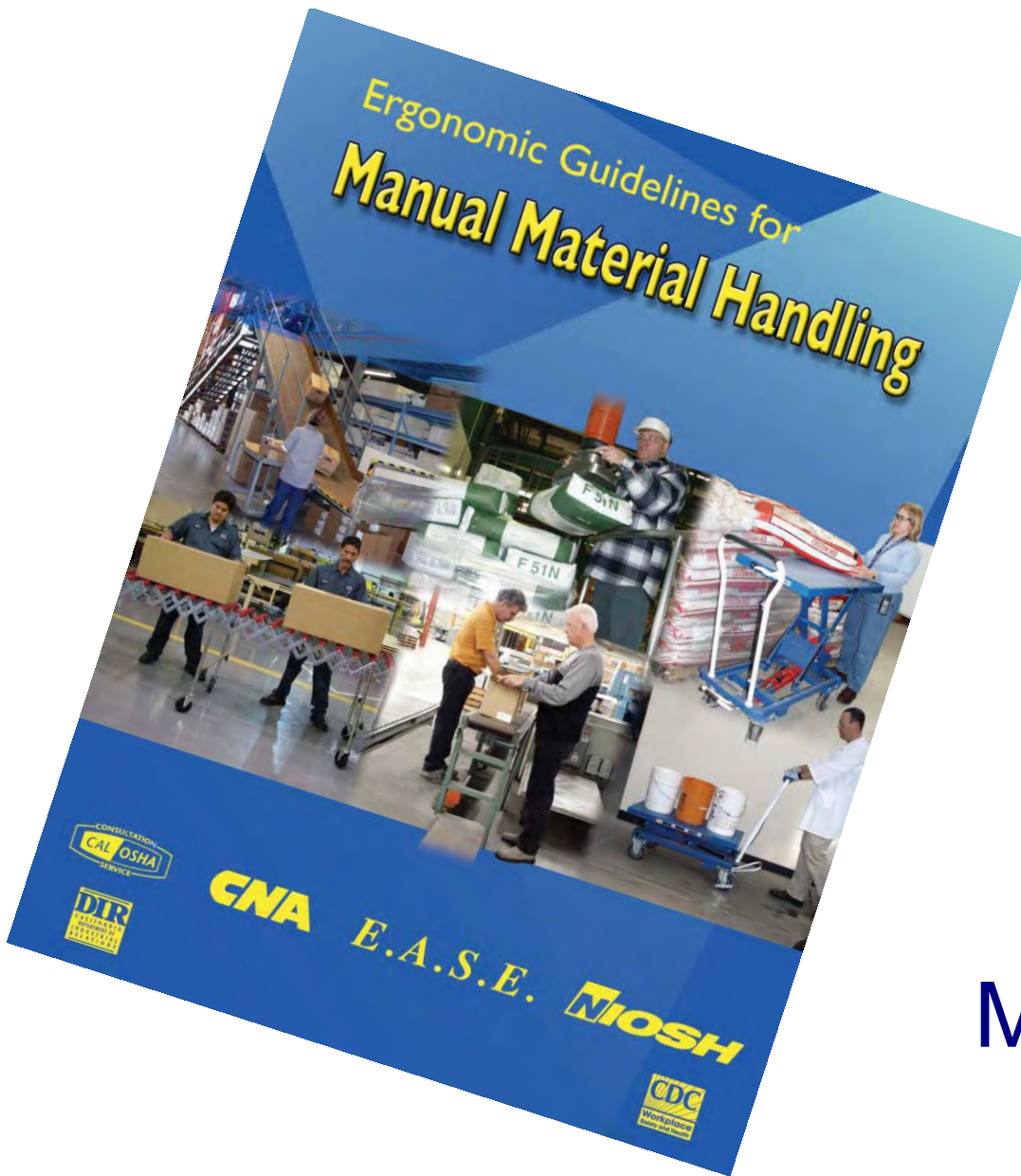
Purdue University





Material Handling Equipment Distributors Association

www.MHEDA.org



Free download

Ergonomic Guidelines for Manual Material Handling

Gaining Efficiency in Retail Stocking

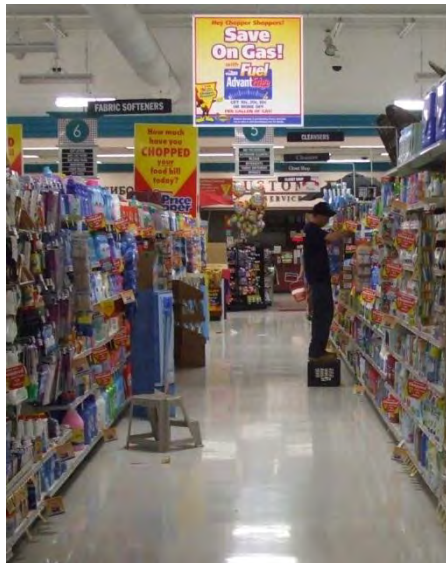


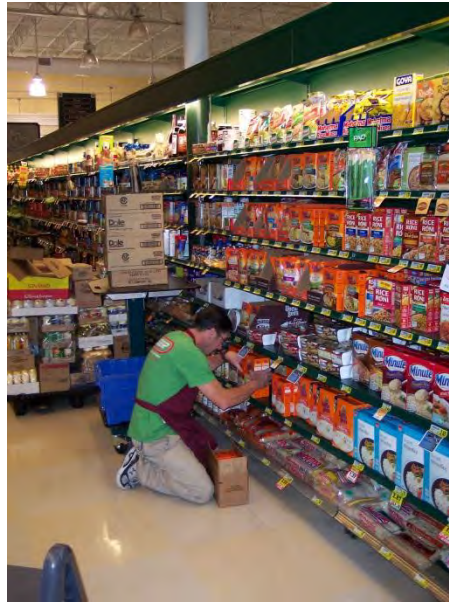
Understanding the issues





Understanding the issues





Understanding the issues



Understanding the issues



Understanding the issues





Manual material handling



Understanding the issues

Manual material handling



Understanding....

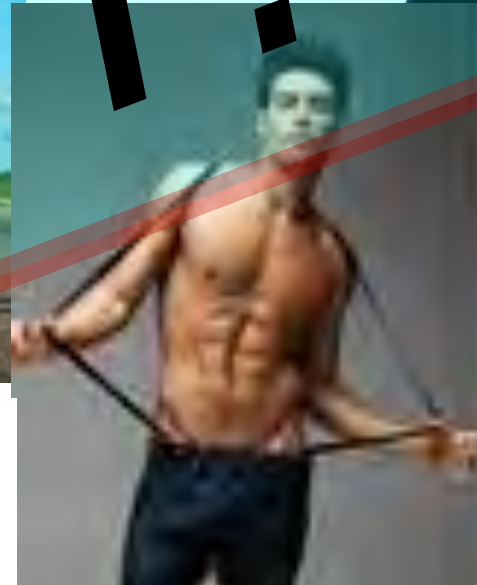


.... the issues



Understanding the issues

There are no manual handling issues



NOT!

Understanding the issues

What are the two largest
issues effecting
Workman's Comp costs

Aging Workforce

Obesity

Understanding the issues

Aging Workforce

- ✓ In 1972, average age of a US worker was 28. Today it's 46.
- ✓ The number of workers aged 45+ has doubled since 1950.
- ✓ According to the AARP, the number of people 55 years and older in the labor force – which stood at about 18.2 million in 2000 – is projected to rise to 25.2 million this year and nearly 32 million by 2025.

1. Source Ergonomics ASSE Feb 2009 Vol 2, No2 – article Ronald Porter, PT, CEAS, Director, Back School Atlanta, Enhanced Ergonomics: What Works with the Aging Workforce
2. Gaither, A., (2003). Health and Safety in the Aging Workforce, Retrieved January 20, 2006, from <http://www.asse.org/gaitherpdcpaper.htm>

Understanding the issues

Obesity

- ✓ The most obese workers file twice as many WC claims as healthy weight workers and have 13 more lost workdays.
- ✓ WC medical claims cost are 6.8 times higher for the most obese workers and indemnity costs are 11 times higher.
- ✓ The body parts most prone to injury are: back, lower extremities, wrist, and hands.
- ✓ The most common causes of these injuries were lifting, lowering, and slipping – a.k.a. manual material handling.

Understanding the issues

The shelves have
grown in height
....and they are
tightly packed



Understanding the issues

Case goods packaging has changed

...once the plastic is removed the bottom
“flat” needs to be fully supported



Understanding the issues

Supporting the “flat” is awkward and leads to poor ergonomic ...lack of efficiency ...and product damage.



Let's look at some solutions

.....remembering there is no magic bullet

.....there is no single solution that works for all situations

....it is likely that more than one solution would be appropriate.



Case are opened and
inventory is set on
shelvesthis stock has
to be rotated.



One solution not only solves the back problem, it eliminates the wasted motion and increases productivity.



Battery powered scissors lift





Even the important customer service function of **loading the customer's car** exposes the employees to some huge H & S issues.

A solution could be an elevating four wheel cart that safely brings the load to the vehicle and reduces the bending to load it.



In this retail paint store 70 to 90 lb. pails need to be moved from pallet to mixer and shaker - then back to the pallet



Where the problem is
injuries.....



..... and lost time

This solution not only solves the lower back problem, it substantially enhances productivity.



Every pail must be shaken before it is given to the customer!





Vacuum
lifters are
highly
efficient for
handling
pails

They can be easily adapted and work well
in a small work areas.



Vacuum lifters are efficient and very useful in areas when sorting cartons or cases require multiple pick and place tasks



Balancers can also be used to effectively handle containers for pick and place tasks.

Large inventories, in cramped quarters, which are constantly turning



Cases (40 to 50 lb. each) and pails (70 to 90 lb. each) need to be moved from pallets, stacked or re-stacked to rotate the inventory



One solution is manually propelled power stackers.

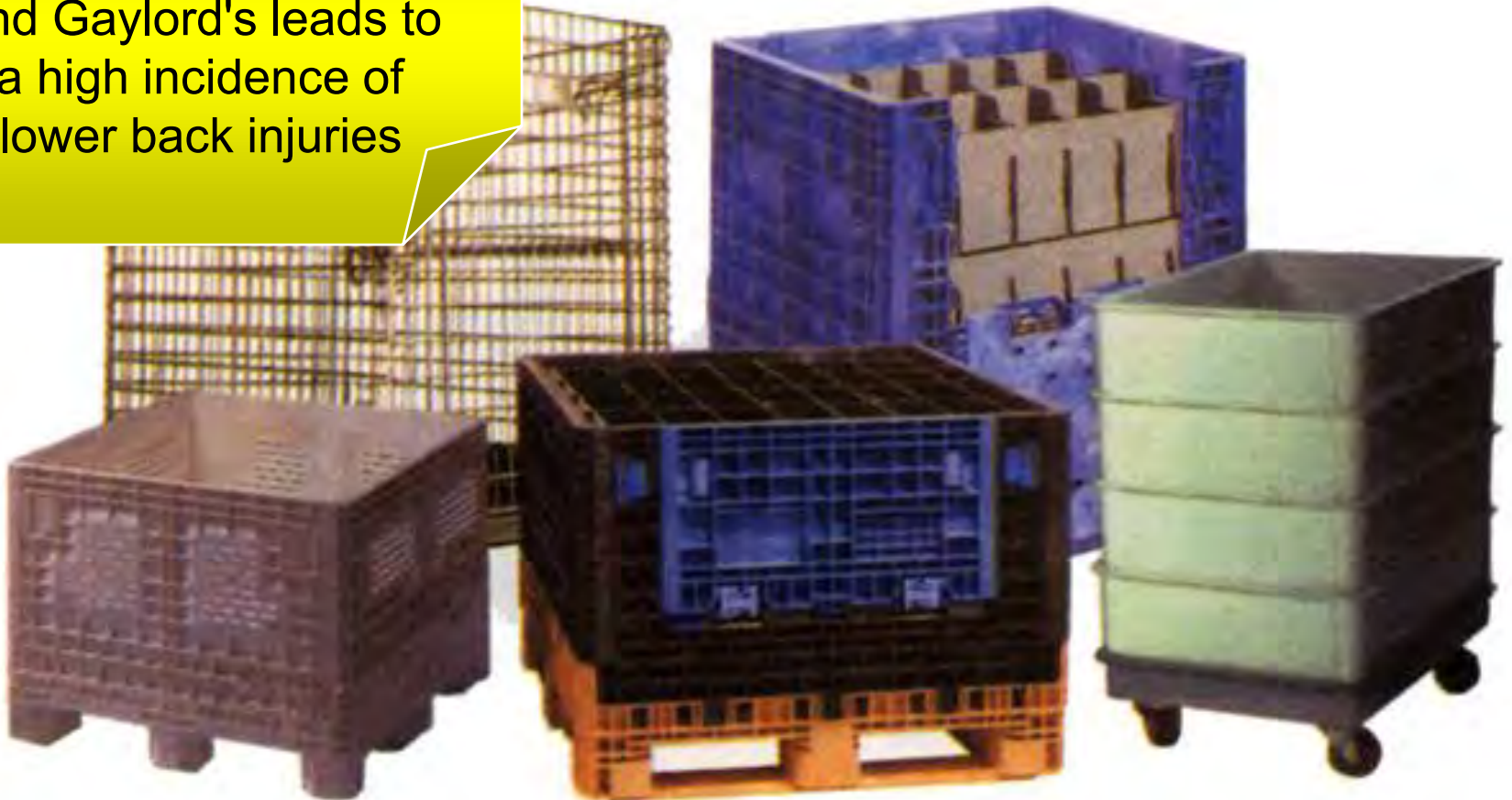
They are highly maneuverable in tight quarters and can eliminate the manual lifting



These are inexpensive choices especially when compared to fork lifts

Containers

Manual loading and unloading of wire baskets, containers and Gaylord's leads to a high incidence of lower back injuries







Lifts that raise and tilt at the same time can work well in some applications.

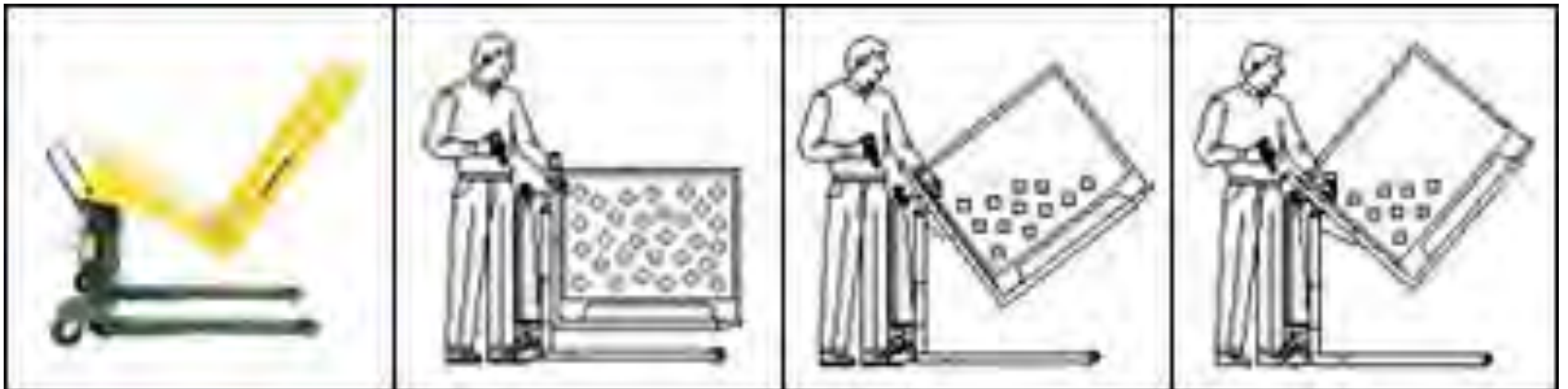


There are
spring loaded
positioners
elevates the
goods in the
container to
speed picking
the parts and
eliminates the
bending and
back extension
issues



10/04/2008

High hinge tilters
are ideal for
gaining access to
the bottom and
back of containers



These spring
loaded
positioners can
be adapted
fitted into
carts, hampers,
wheeled tubs
and gondolas



Pallets



**MANUAL LOADING AND UNLOADING
OF PALLETS CONTINUES TO BE
ONE OF THE MOST COMMON AND
MOST INJURY PRONE TASKS
IN INDUSTRY TODAY**



As much as 40% of the time
required unloading a pallet, can
be spent walking around it!



Here is a very typical problem



Back bending, back extension –
serious issues and for the older
worker or obese, a VERY serious issue

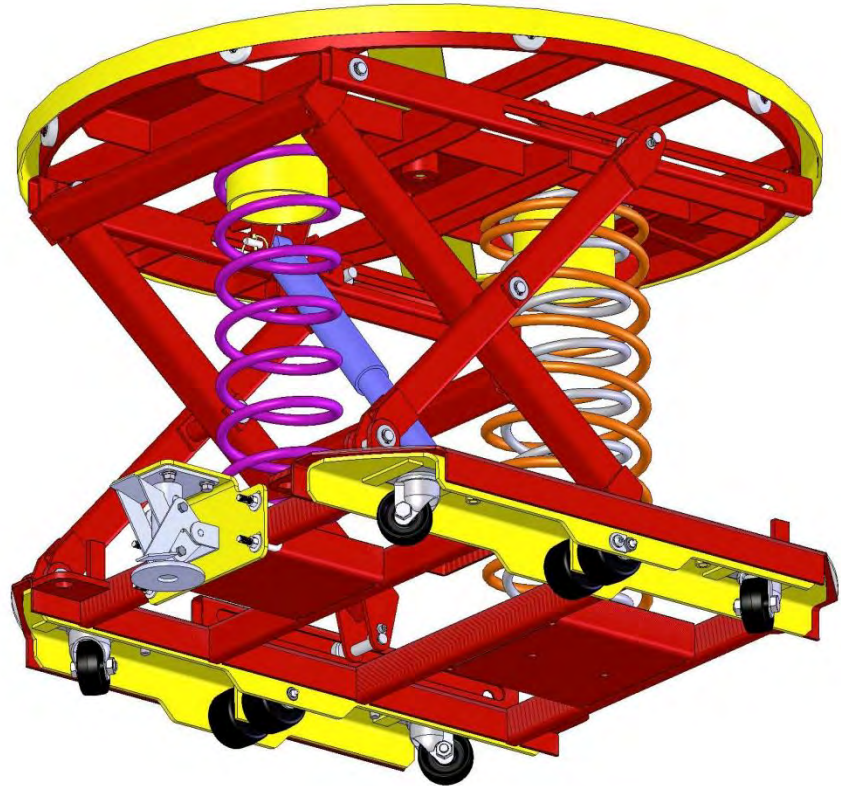
Load positioners automatically function holding the top layer of goods in the 30" to 40" window, greatly reducing the bending

The turntable eliminates having to walk around



Load positioners can
be made portable

This provides for
flexibility on where
they can be used
on cramped back
rooms or congested
work areas.



Some load
positioners use
air bags instead
of springs.





Vacuum lifters fitted to articulated arms allows extended reach



Inexpensive stackers to transport pallet loads can also double as a positioner.



Auto-positioning display systems

- Can be loaded with full pallets
- True customer convenience
- Ideal promotional space
- Proven to increase sales
- Sustainable and reduces waste





They come in all shapes and sizes and to gain the maximum benefit should be applied to the application



....they provide
easy access to
loads



These lightweight
aluminum stackers
are highly
maneuverable...



...and increase
efficiency and
productivity!



New specialty cart shows real
promise in retail stocking



Adjustable
height shelf



Works well with totes





Skid lifters

Manual and powered

Careful, can only be used with
open bottom pallets or skids





Self leveling carts

Calibrated spring provides linear moment and it is adjustable

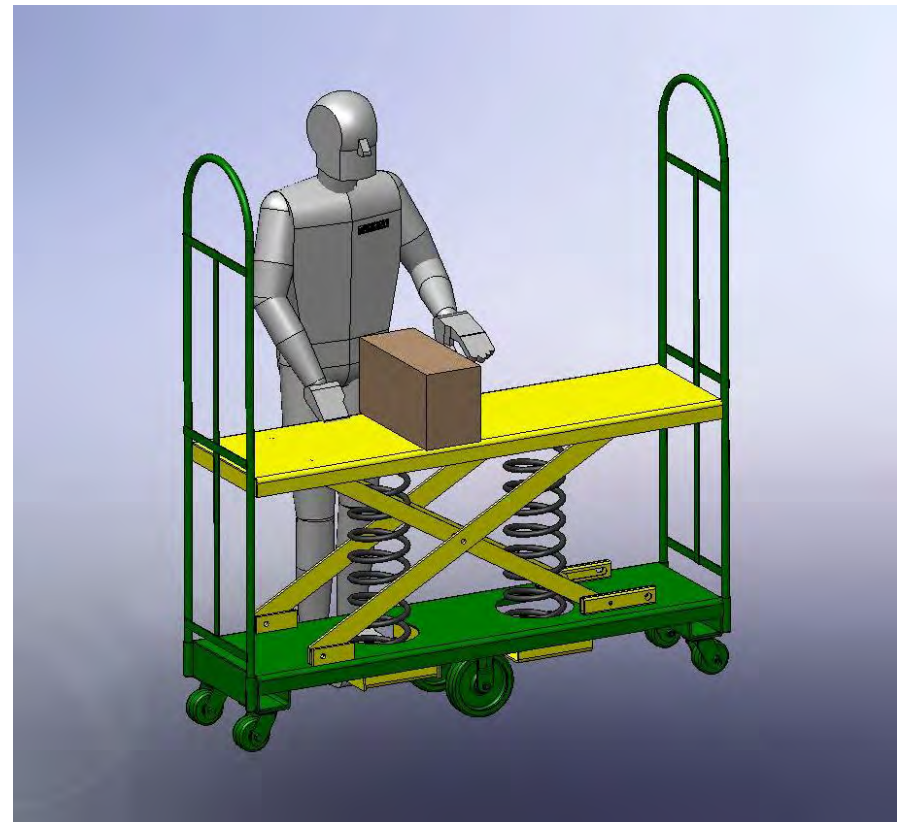




Self leveling
Uboats

Calibrated spring provides
linear moment

These can be retro-fitted
to existing Uboats





Self leveling floats
bring the bottom
half of the load...



....into the correct operating
range which eliminates bending
and back extension

Some care should be used
not to overload carts



The wheel choice can have a huge impact on the rolling friction of any cart, dolly or rack.

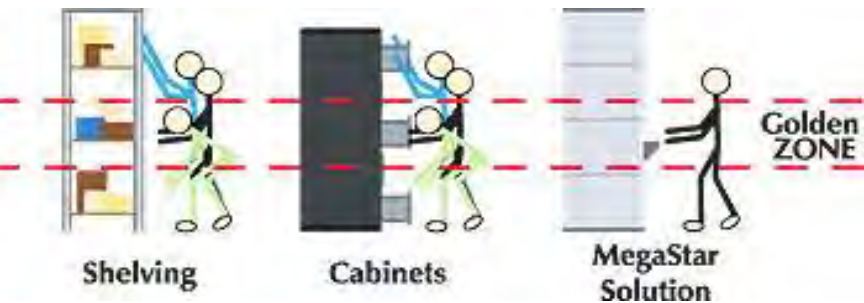




Roller conveyor can be used in rack and shelving to reduce the stress on storing or retrieving heavy units loads



High density vertical storage systems speed order picking and put each item at the correct height



Damaged product on the
bottom of a pallet can be
easily removed



Pallet rotators make quick
work exchanging pallets



Walking and the effects on the body caused by the flooring

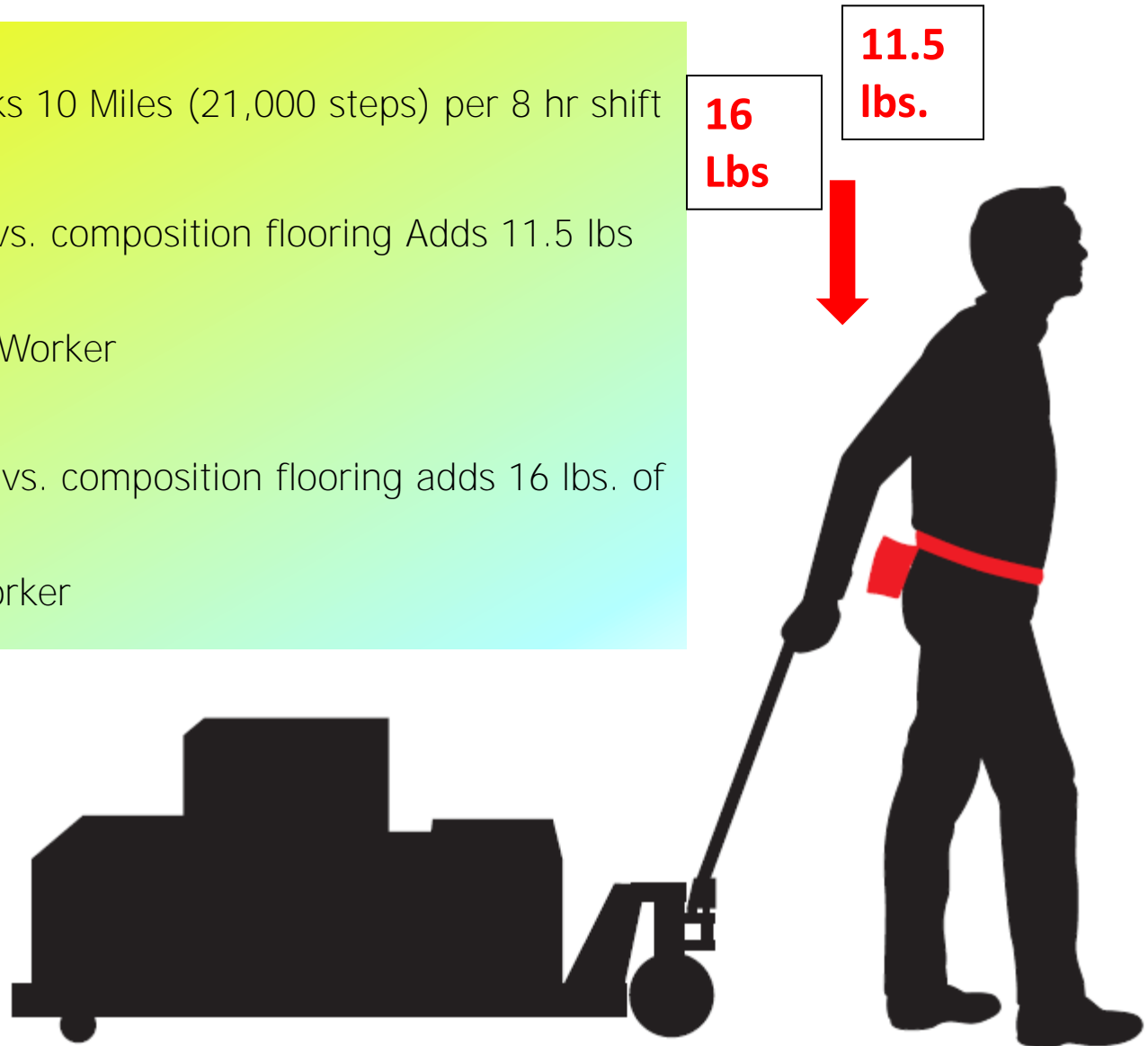
- Stress
- Fatigue
- Loss of productivity
- Injury and loss time



Summary of OSU Ergonomics

Testing special flooring materials

- Avg Order Picker Walks 10 Miles (21,000 steps) per 8 hr shift
- Walking on Concrete vs. composition flooring Adds 11.5 lbs of Body Weight to Avg Worker
- Walking on Bar Grate vs. composition flooring adds 16 lbs. of Body Weight to Avg Worker



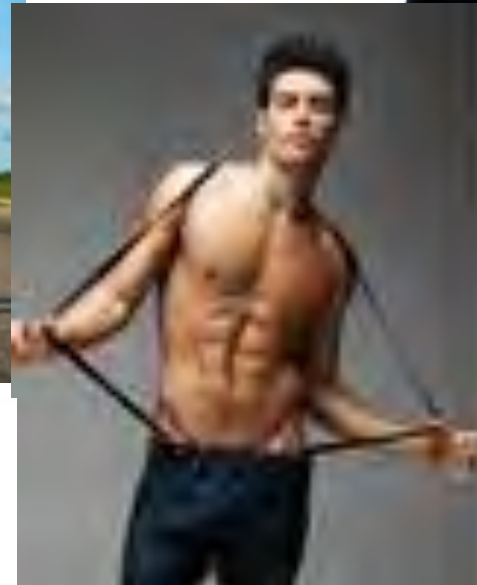
This expandable conveyor is driven right into the truck

The individual boxes and cartons are conveyed right to the worker

Notice how the odd sizes and shapes are handled easily by a single piece of equipment



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Questions?