



The Bad Ergonomics of Order Fulfillment in Distribution Centers



James Galante

Chairman

EASE Council

Material Handling Industry

Charlotte, North Carolina

PH: 207-329-5555



MHI[®]

THE INDUSTRY THAT MAKES THE SUPPLY CHAIN WORK



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Ergonomic Assist Systems & Equipment



18 Member Companies

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Speakers and Presentation Materials

Workshops and Outreach to the user



Manual Material Handling in Warehouses and Distribution Centers





DOLLAR GENERAL

FOOT LOCKER, INC.



Oriental Trading



Abercrombie & Fitch



AMERICAN EAGLE OUTFITTERS, INC.

SEARS HOLDINGS CORPORATION



There's a way



that was easy:



BANANA REPUBLIC

christopher & banks



Bath & Body Works



Limited brands



VICTORIA'S SECRET

Understanding the issues



Understanding the issues



Understanding the issues



Understanding the issues



Understanding the issues



Understanding the issues



Understanding the issues



Understanding the issues





Understanding
the issues



Understanding
the issues





loading pallets on walkie
riders

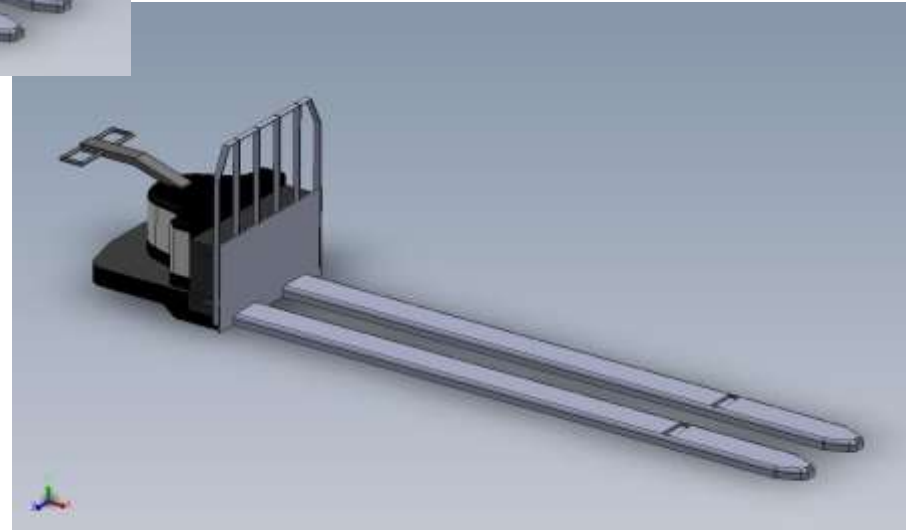
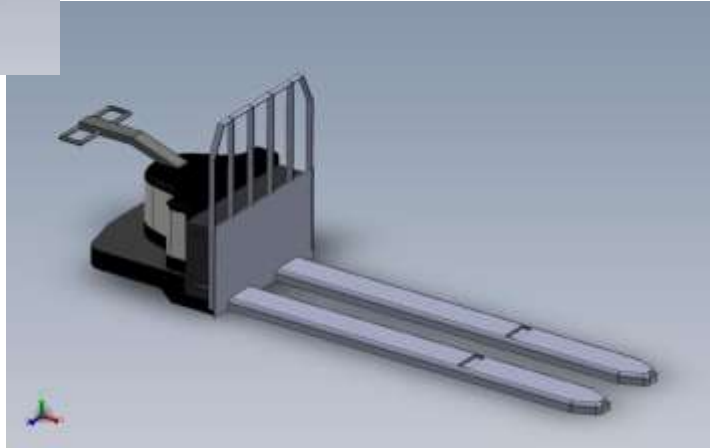
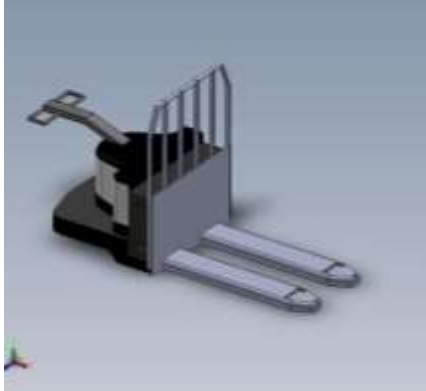
...from pallets sitting
on the floor!



Handlers loading pallets on walkie riders




Some DC's use double and even triple walkie riders



Remember these walkies
only have 5" or 6" of
vertical travel





and it
doesn't end
here.....

In the retail environment all these goods need to get from the backroom to the shelf



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.



Understanding the issues





Understanding the issues



Understanding the issues



But, since most companies are employing people like these folks there are no manual handling issues



The two largest issues effecting
Workman's Compensation costs are:



obesity

Why Do Older Workers Work?

- ✓ Studies found many older workers plan to work past the traditional retirement age (Galinsky)
- ✓ This trend can be attributed, in part, to the reduced value of retirement portfolios/income. (Administration on Aging)
- ✓ A higher cost of living today (Administration on Aging)
- ✓ And they work because they want to, because:
 - they want to stay active
 - they are highly engaged in their work
 - satisfied with their jobs
 - committed to their organizations (Galinsky)

The Aging Workforce

Understanding the issues

- ✓ 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 was about 18.2 million in 2000 – It rose to 25.2 million last year and it is projected to rise to 32 million by 2025.



As We Age....

- ✓ Maximal Strength
- ✓ Muscle Mass
- ✓ Bone density
- ✓ Visual and Auditory, Acuity
- ✓ Fitness
- ✓ Aerobic Capacity
- ✓ Cognitive Speed/Function

- ✓ Gain Weight
- ✓ Arthritis
- ✓ High BP
- ✓ Diabetes
- ✓ Depression
- ✓ Heart Disease
- ✓ Menopausal & Post Menopausal Issues

Obesity in the Workforce

Definition of Obesity.....

Body Mass Index (BMI) of 30 or higher.

BMI: A measure of an adult's weight
in relation to their height and age.

Obese is generally defined as at
least +30 lbs. overweight.



The Costs of Obesity

- More than one-third (34.9%) of U.S. adults are obese.
- Obesity-related conditions include heart disease, stroke, diabetes and certain types of cancer.
- The annual medical cost of obesity was \$147 billion; the individual medical costs are \$1,429 higher than those of normal weight.

The Effects of obesity

Obese workers....

...file twice as many WC claims

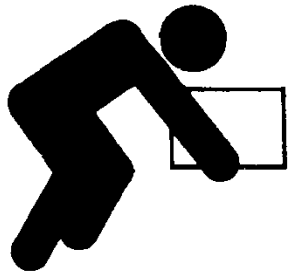
...have 13 more lost workdays.

...claim 6.8 times more medical claims under WC

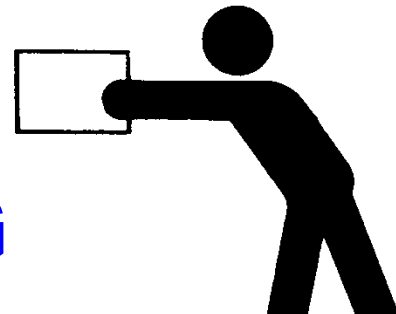
...indemnity costs are 11 times higher.

...body parts most prone to injury are: back, lower extremities, wrist, and hands.

The most common causes of these injuries were lifting, lowering & slipping – a.k.a. Manual Material Handling.



**LIFTING
STRETCHING**



REACHING

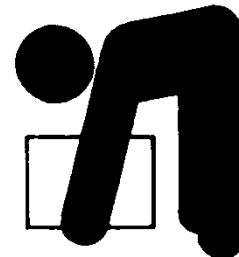


BENDING

STOOPING



**and
WALKING**



**These unnecessary worker activities
can result in serious problems**

The effects of manual material handling represent the biggest single contributor to:

- *lost time injuries*
- *and the most Workman's comp claims*
- *highest cost of Workman's comp claims*



The manual material handling issues simply can no longer be ignored because of:

- Increased volumes of goods being moved*
- Heavier unit loads (FedEX & UPS)*
- Escalating WC costs*
- Market pressure to do more with less (foreign pressure)*
- Little training & limited supervision (retail)*
- More obese workforce*
- Aging workforce*
- Higher shelving, tightly packed and flimsy packaging*

Ergonomic initiatives and engineering interventions can significantly reduce the impact of these issues

Finding balance



It is NOT balance because



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.

Pallets



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

Opening up the pick slots



Spread pallets out.....



Various images.....





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





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

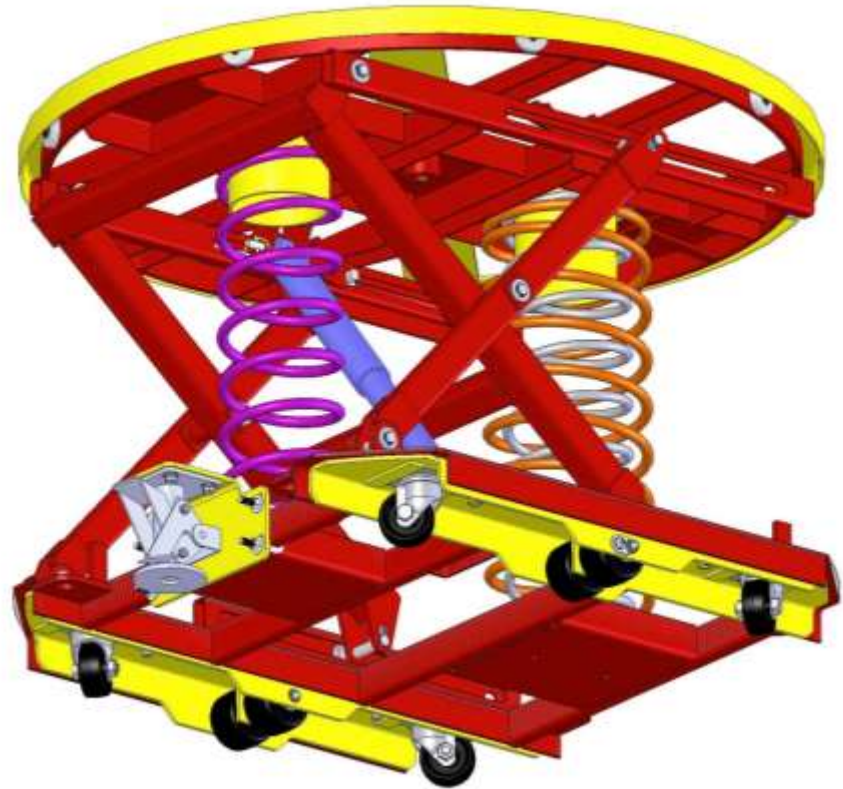
Load positioners automatically function holding the top layer of goods in the 30" to 40" window, greatly reducing the bending

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.



....Careful, compressed air is needed to charge the air bag



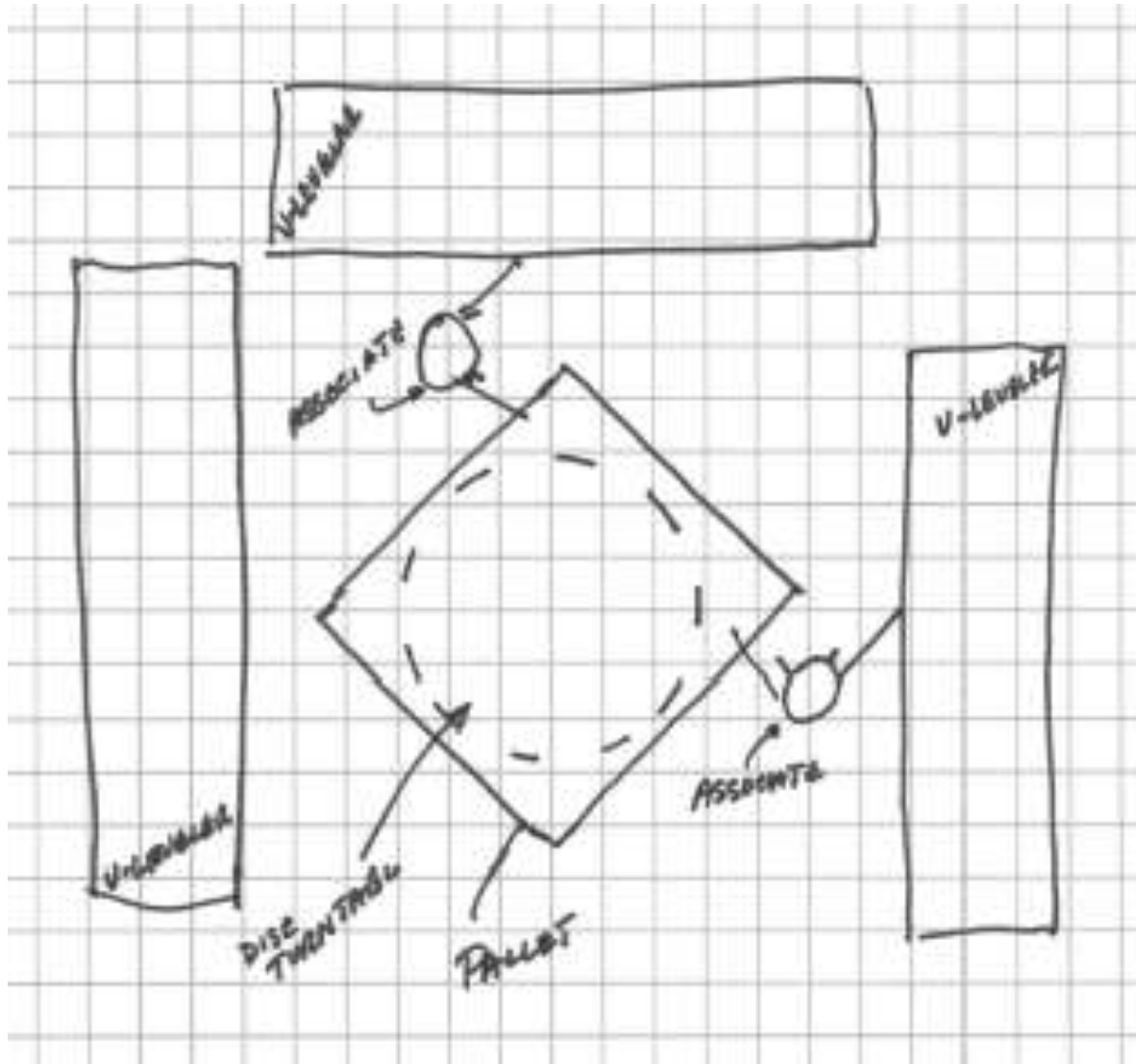
Manual Turntables

For the backroom

*.....to transfer
merchandise from
pallets to U-boats or
to stocking carts*



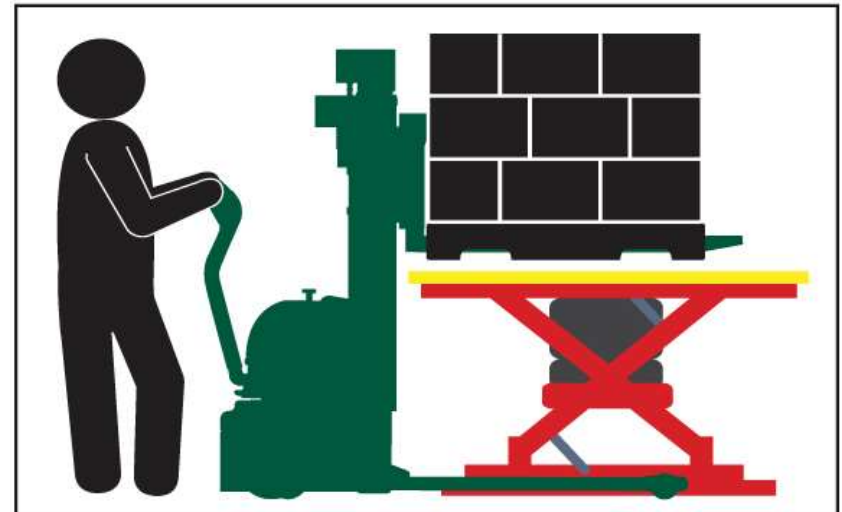
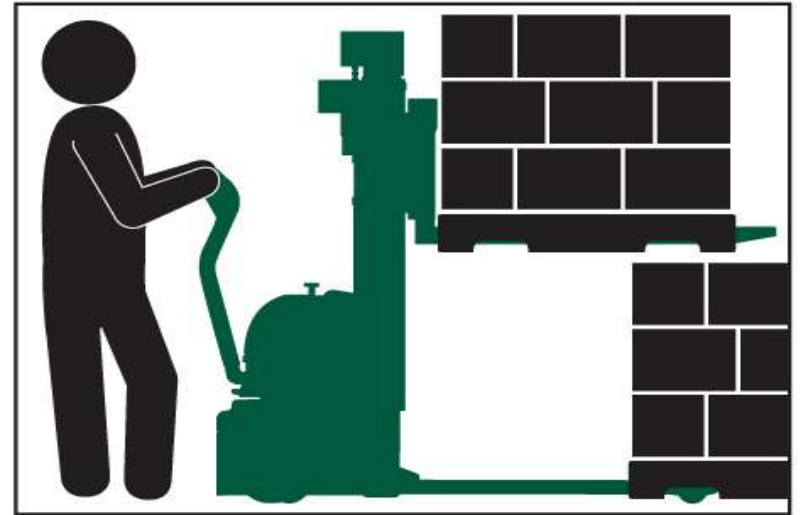
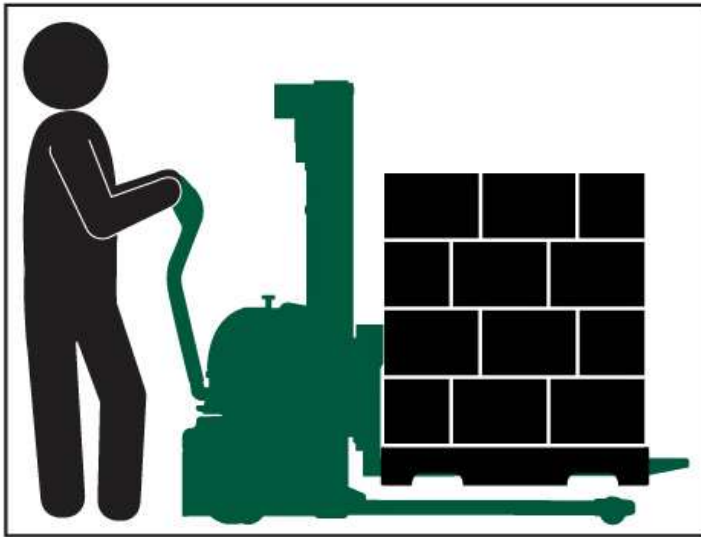
Setting up a turntables in the backroom



One person can off-load cartons to U-boats just about as fast as two people without a turntable.



Stackers powered up/dn
and
Full Power Stackers



Inexpensive stackers can transport pallets, stack them to free up floor space, load positioners and double as a positioner.

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



These are inexpensive choices especially when compared to fork lifts



Vacuum lifters fitted to articulated arms allows extended reach



Auto-positioning display systems

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



Vacuum lifters are highly efficient for handling cartons, bags and 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 case goods require multiple pick and place tasks

Containers

Manual loading and unloading of wire baskets, containers, gaylords and totes leads to incidents of upper & lower back injuries



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

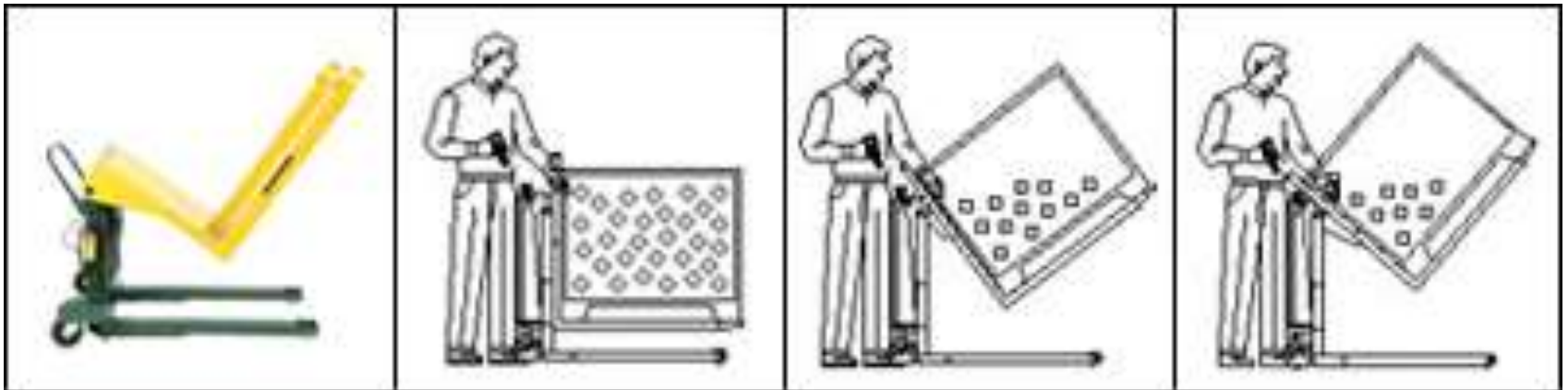


10/04/2008

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



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



Carts, Dollies, Platform Trucks and U-boats



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



Eliminates going up & down a step stool



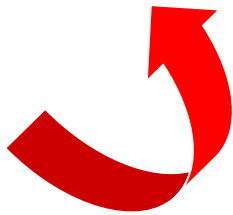
Adjustable height shelf



Adjustable height carts with a tilt stand positions totes



This?



Speeds stocking and eliminates the stressors.
Good ergonomics!

Or This?





Self leveling carts

Calibrated spring provides linear moment and it is adjustable





Manual and powered

Skid lifters



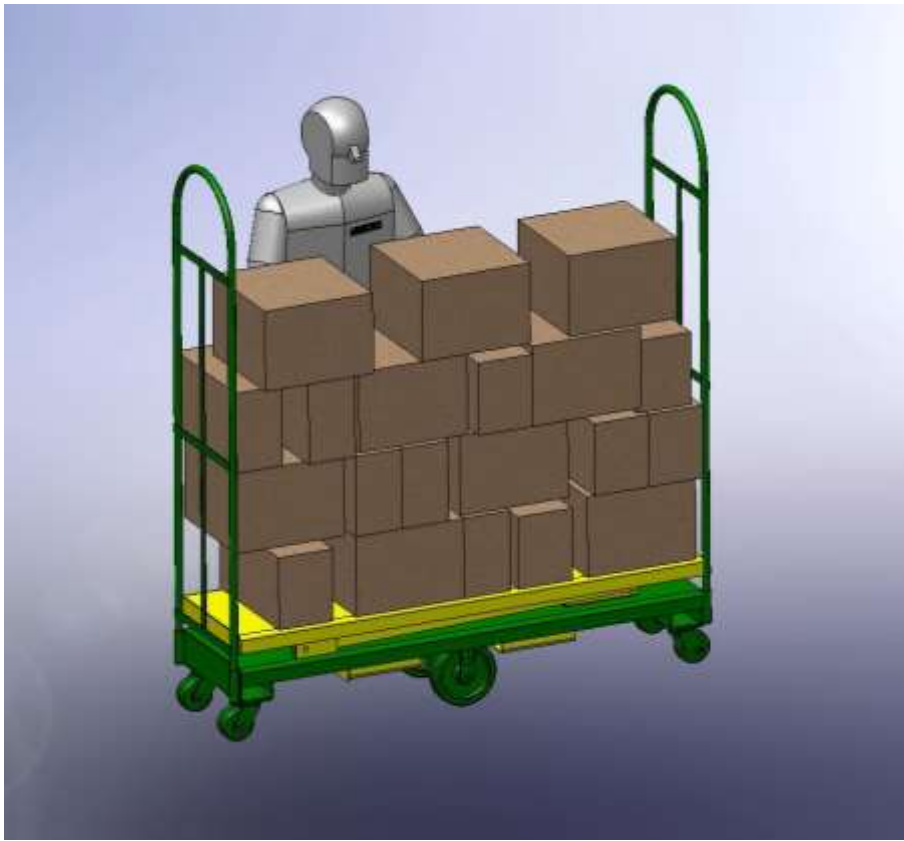
Careful, can only be used with nestable,
open bottom pallets or skids

Some solutions not only solve the back problem, they can eliminate wasted motion and increase efficiency.



Battery powered scissors lift





Self leveling Uboats

Calibrated spring provides
linear moment

These can be retro-fitted
to existing Uboats





Calibrated spring provides linear moment





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



....into the correct operating
range which eliminates bending
and reduces reaching

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 portable rack.

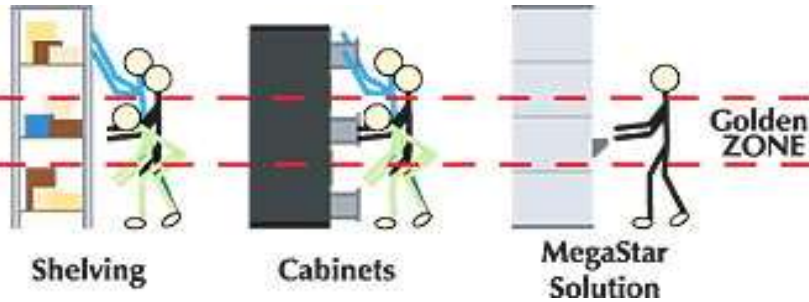




Roller conveyor can be used in rack and shelving to reduce the stress on storing or retrieving heavy cases and cartons



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



This expandable conveyor is driven right into the truck

The individual boxes and cartons are conveyed out

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



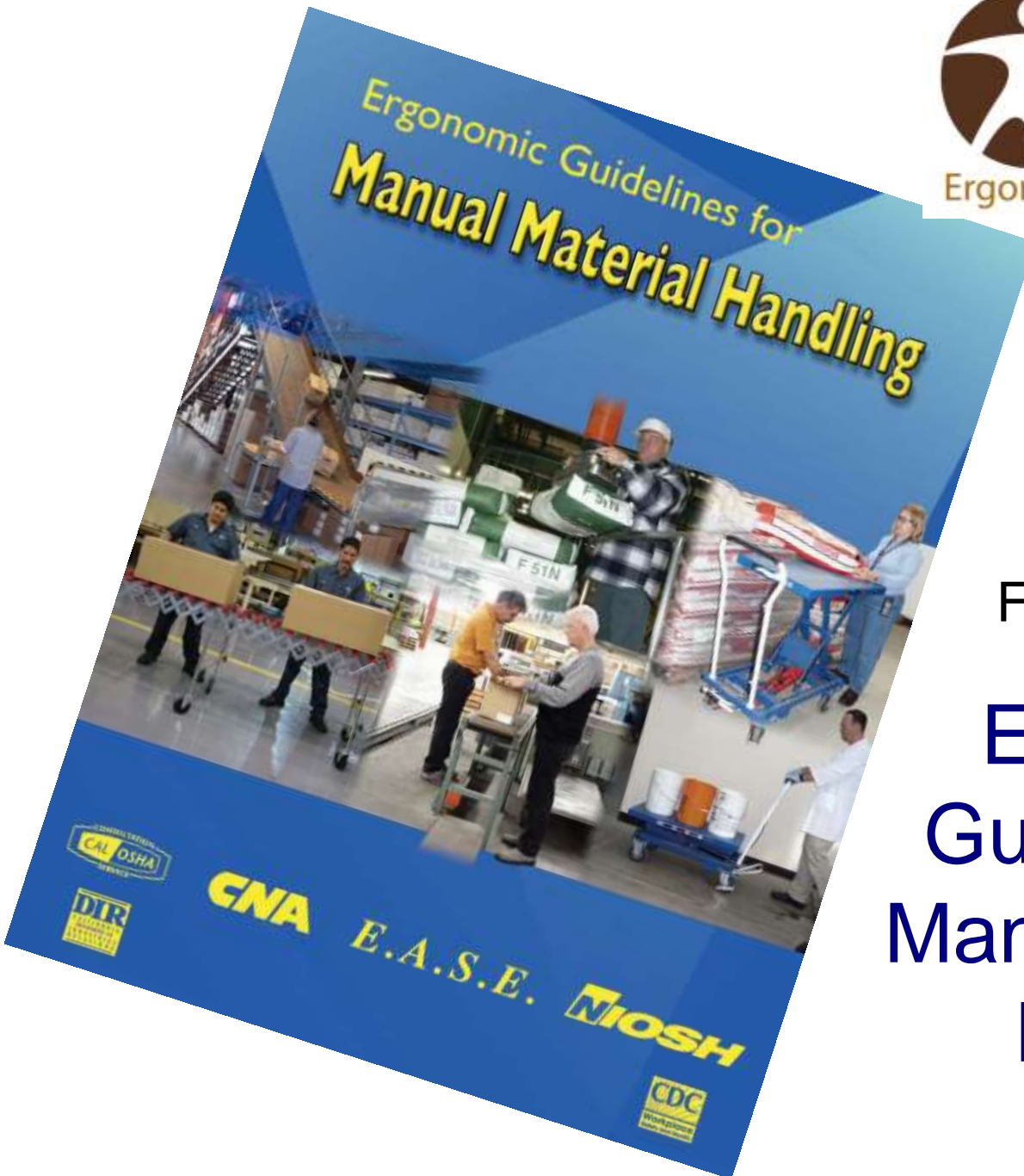
Damaged product on the bottom of a pallet can be easily removed



Pallet rotators make quick work exchanging pallets

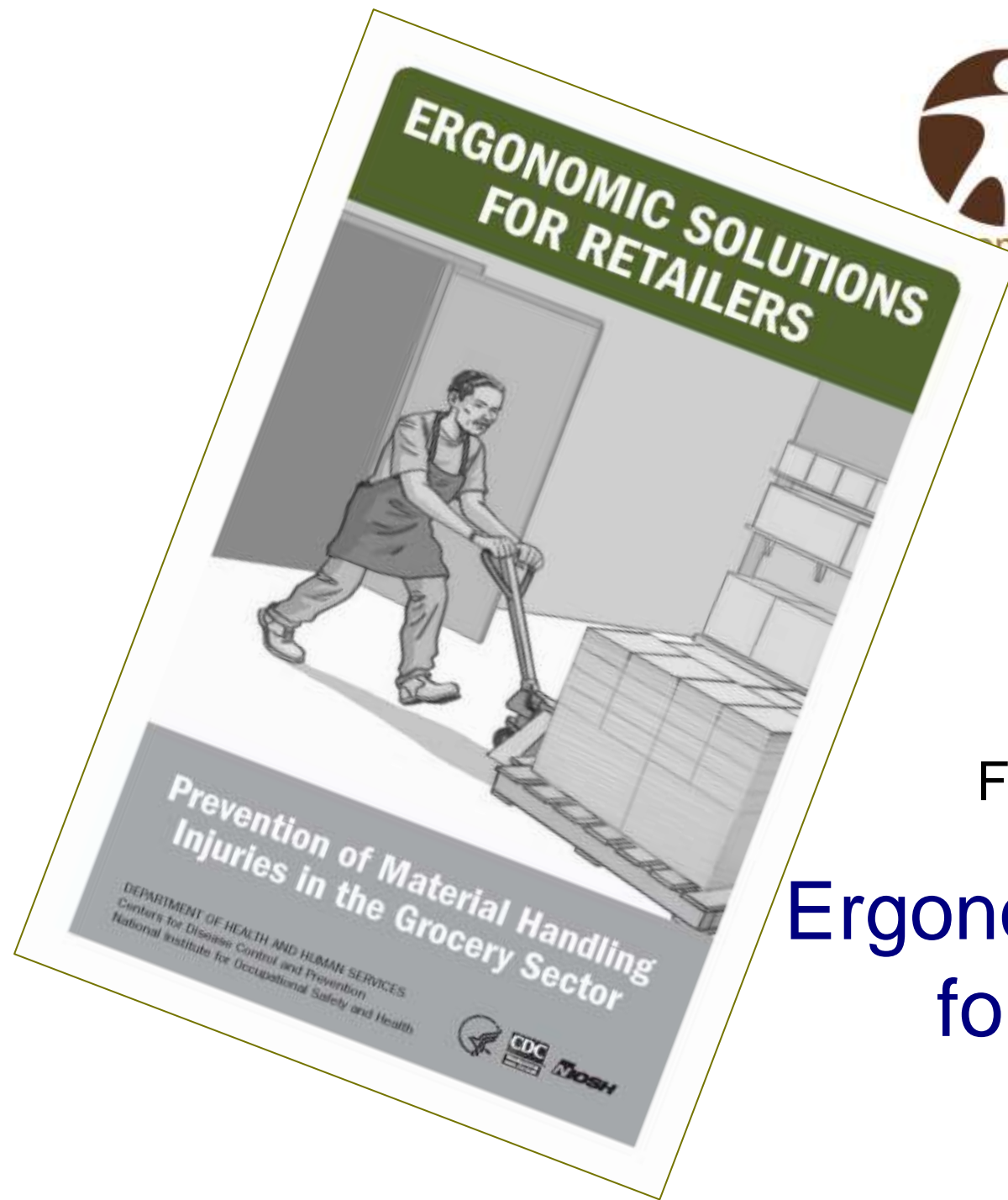
There are no manual handling issues





Free download

Ergonomic Guidelines for Manual Material Handling



Free download

Ergonomic Solutions for Retailers

FINIS

Thank you!

James Galante
Chairman

EASE Council
www.mhi.org/EASE

PH: 207-329-5555

