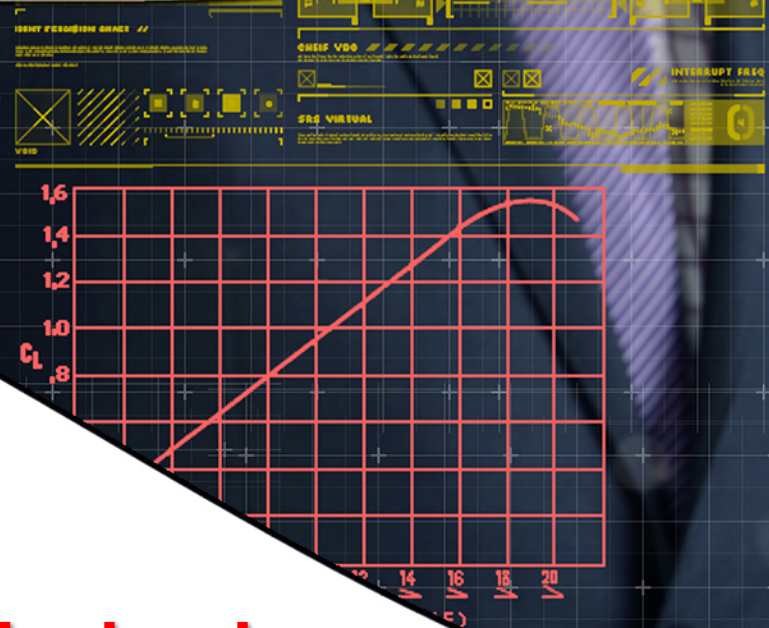




hChoices.com

Optimal wellness through technology, education
and social engagement

σ_{full}^2
known from E1 run
 $3n_{\text{meas}} \sigma_p^2(\theta^0; u) + n_{\text{meas}} \sigma_{\text{NH}}^2(\theta^0; u) + \sum_{i=1}^n \sigma_{\text{NH}}^2(\theta^0; u)$
Ratio of measured counts from the full NHg
target in the elastic peak region / region of interest



The Importance of Body Mechanics

Back Pain

- **Low back pain is the 5th most common reason for all physician visits in the U.S.¹**
- **Back Pain is the most frequent cause of activity limitation in people younger than 45 years old.²**
- **Americans spend at least \$50 billion per year on work related musculoskeletal disorders.**

What are Body Mechanics?

- **The use of one's body to produce motion that is safe, energy conserving, and efficient that leads to the maintenance of a person's balance and control.**

The Value of Proper Body Mechanics

- **Conserve energy**
- **Reduce stress and strain on muscles, joints, and ligaments**
- **Produce movements that are safe, effective, and efficient**
- **Reduce potential of personal injury**

Principles of Body Mechanics

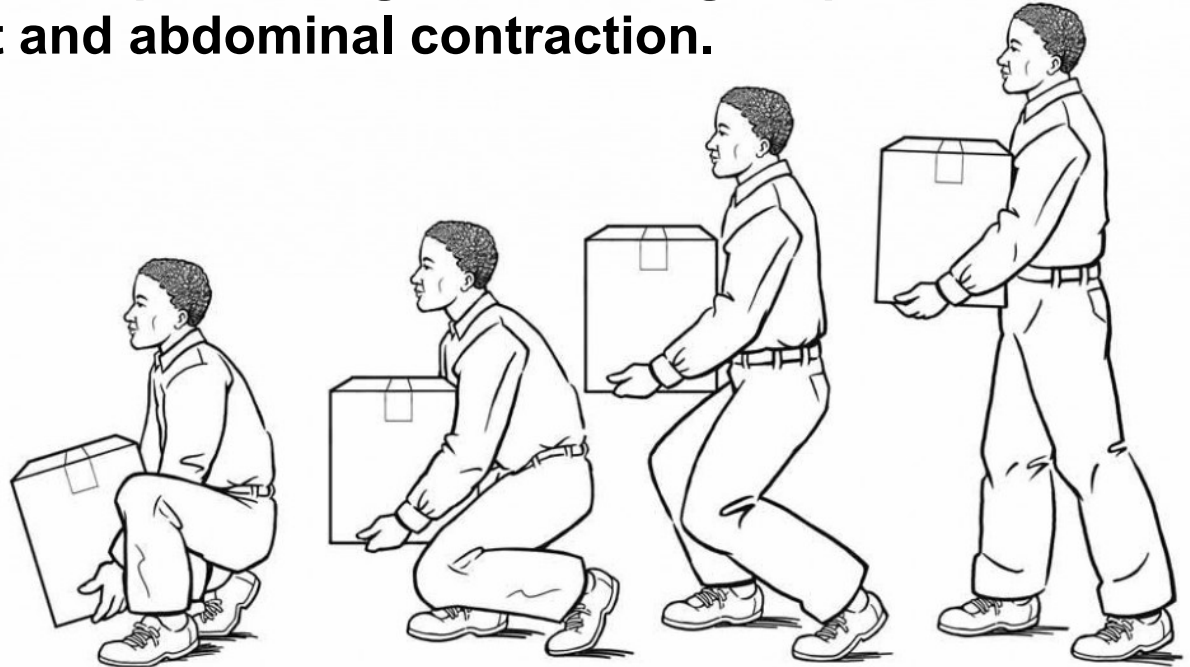
- **Remain close to the object.**
- **Use the largest and strongest muscles of your arms, legs and trunk to lift, push, pull, or carry an object.**
- **Widen your Base Of Support so your vertical gravity line falls within your BOS.**
- **Use short lever arms for better control of the load when lifting or carrying.**
- **Avoid twisting your body when you lift.**
- **Maintain your Center Of Gravity close to the object's COG; raise or lower your COG or the object's COG.**
- **When possible, push, pull, roll, or slide an object rather than lift it.**

Precautions When Lifting, Pushing, Pulling, Reaching, and Carrying Objects

- **Avoid simultaneous trunk bending and twisting.**
- **Squat rather than flex your trunk when lifting an object below waist level.**
- **Stand on a foot stool to reach an object overhead.**
- **Push or pull parallel to the surface over which the object is being moved.**
- **Carry a one-hand item alternately with your UEs.**
- **Only lift, push, or pull within your physical capacity and limitations.**

Lifting Models

- **Traditional** – stoop or squat, lifting with a straight spine with posterior pelvic tilt and abdominal contraction.



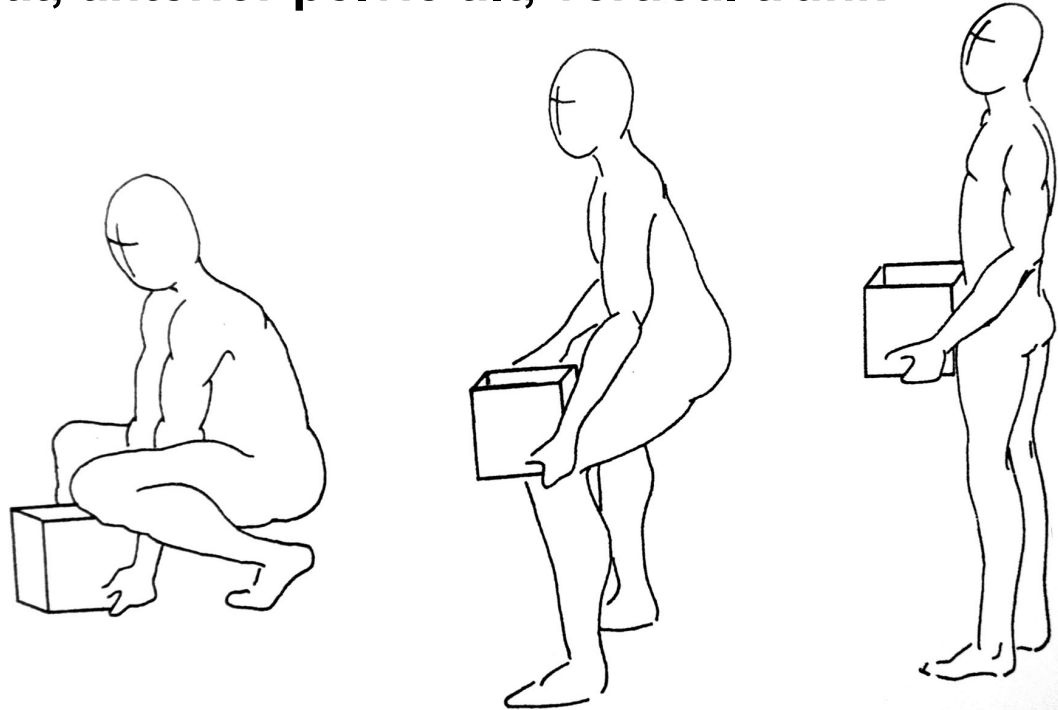
Lifting Models

- **Lumbar Lordosis Models**

- 3 models
- Reduces mechanical stress to the lumbar ligaments and disk
- Compression forces to the disk are anterior, which reduces the potential for a posterior disk rupture
- Lumbar spine stability increases due to approximation of vertebral facets
- Co-contraction of abdominals and lumbar muscles is maximized
- More effective position of strong hip and leg extensor muscles.

Lifting Models – Lumbar Lordosis

- **Deep Squat Lift** – full squat, anterior pelvic tilt, vertical trunk



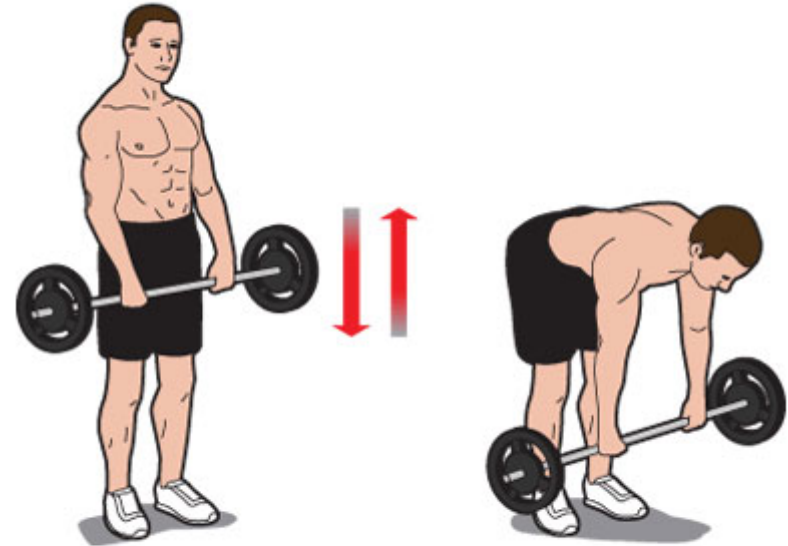
Lifting Models – Lumbar Lordosis

- **Power Lift** – half squat, anterior pelvic tilt, horizontal trunk

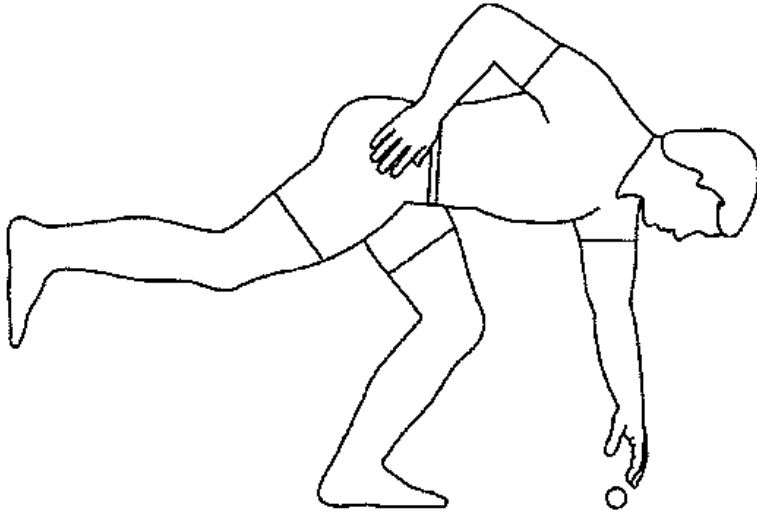


Lifting Models – Lumbar Lordosis

- **Straight Leg Lift** – knees only slightly flexed, anterior pelvic tilt, trunk vertical or horizontal



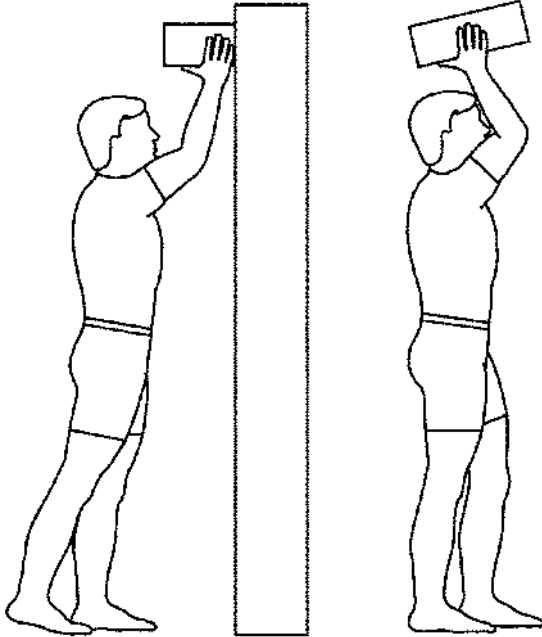
Lifting Models



- **Golfer's Lift** – used only for light weight objects. Stand on one leg, while the other leg is extended to counterbalance trunk flexion.

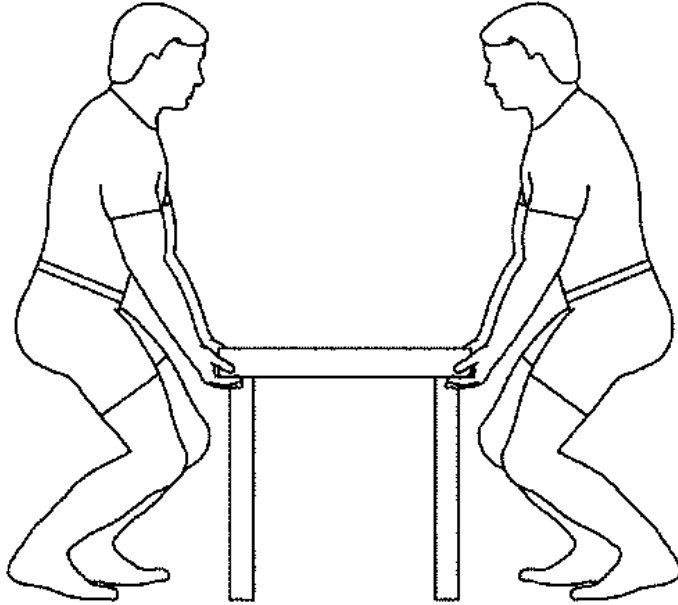
Avoid this lift if pregnant.

Lifting Models



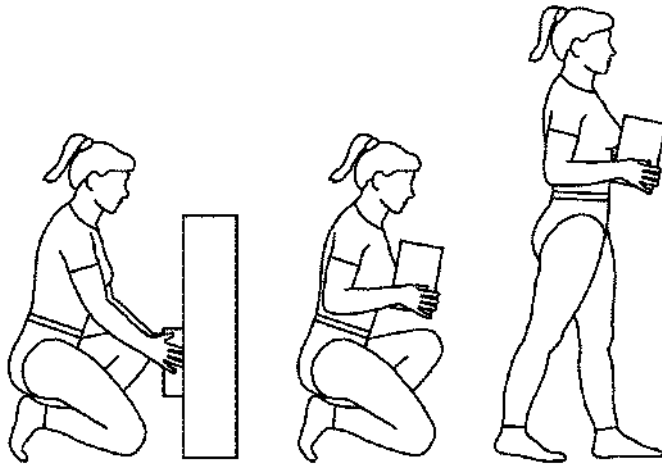
- **Overhead Lift** – used only if the object is light weight and you can't raise your position or lower the object's position
 - Move close to the object. Place one leg ahead of the other. Shift weight to the front leg. Grasp the object with both hands and slowly lift object as you shift equal weight back onto both feet. Carefully lower object to your chest, then to your COG.

Lifting Models



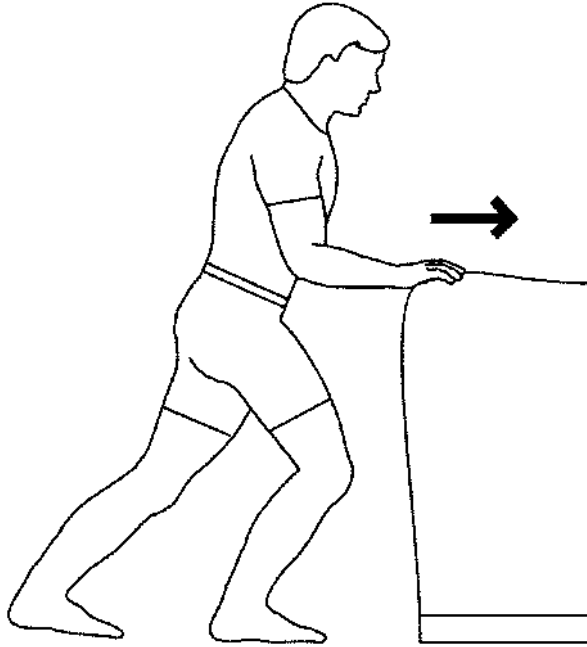
- **2-Person Lift** – use if the object is too heavy, bulky for 1 person.
 - Both people stand on either side of the object as close as possible. Choose who will count for the lift. Squat down, keeping backs straight and firmly grasp the object. The lead person gives a 1-2-3 count and both people lift on 3. Keep abs tight and slowly straighten legs.

Lifting Models



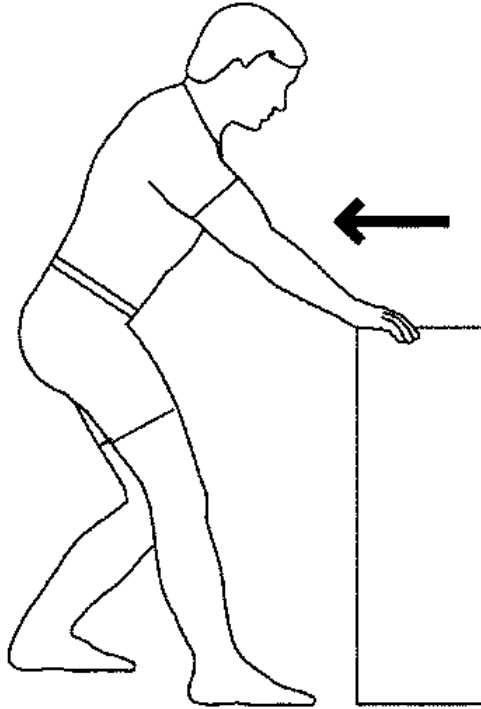
- **The Half Kneel Lift** – useful if object is irregularly shaped or if object is on a low shelf.
 - Stand close to the object. Squat down onto one knee. Keep the back straight and pick up the object and slide up onto thigh or pull toward COG. Tighten abs and stand using the strong leg muscles.

Pushing, Pulling, and Carrying



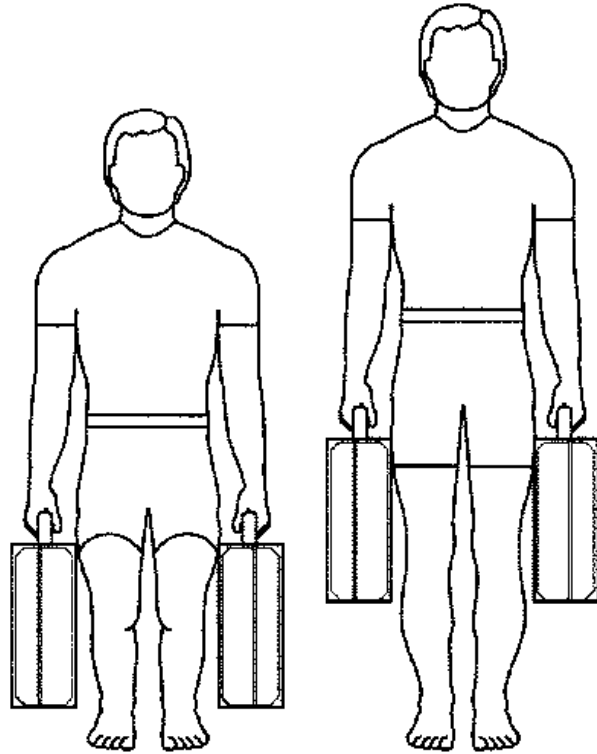
- **Its always better to push than pull!**
- **Pushing: Test the load. Make sure the path is clear. Place one leg behind the other, bend knees, and keep back straight. Tighten abs slowly and smoothly push with arms and legs.**

Pushing, Pulling, and Carrying



- **Pulling: Test the load. Make sure the path is clear. Place one leg behind the other, bend knees, and keep back straight. Tighten abs slowly and smoothly pull with arms and legs.**

Pushing, Pulling, and Carrying



- **If carrying toolboxes or handbags,**
 - Try to carry equal weight in both arms.
 - When lifting boxes, keep back straight and bend knees.
 - Do not twist while carrying the boxes.
 - Lower bags by bending knees, not the back.