



# Lift it, Shift it, Twist it

Optimizing Movement to Avoid Workplace Injury

Dr. Amanda Williamson, PT, DPT, CSCS

Dr. Constanza Aranda, PT, DPT, MSPH



# Disclosures

We present on behalf of the Florida Physical Therapy Association as members of the Early Professional Special Interest Group. We have no monetary or compensatory disclosures to report.

# Why Physical Therapy?

Preparing and serving hundreds of meals a day is physically demanding work; lifting and loading, chopping and stirring, serving and cashiering, and cleaning up too! Strains and injuries are demoralizing, reduce productivity and can be costly.



# Terminology- Introduction

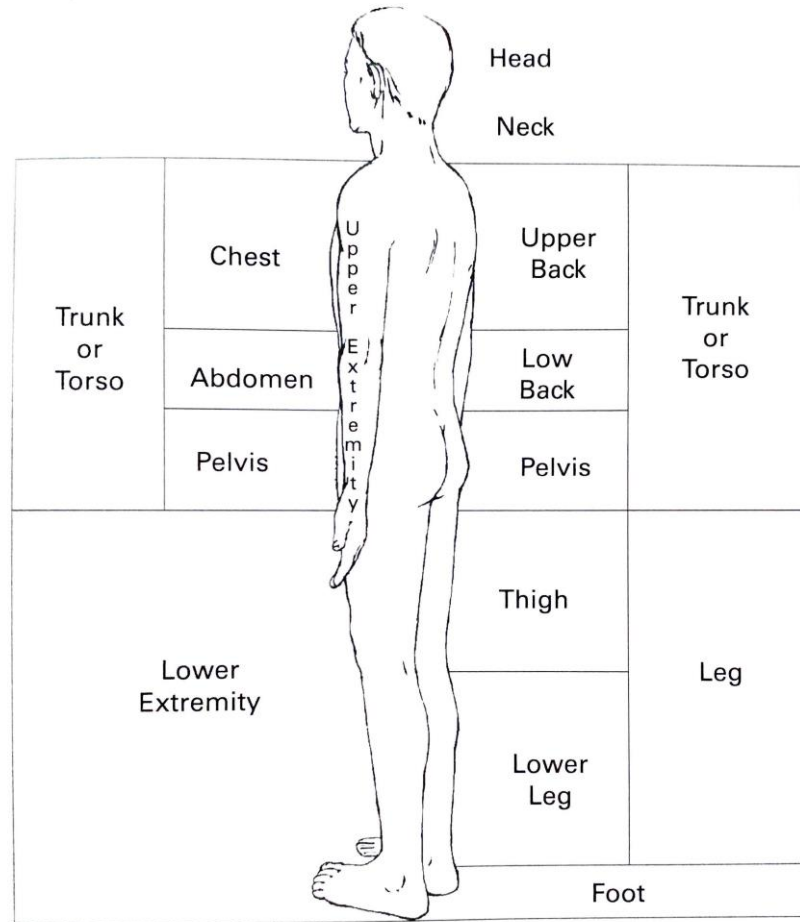
- **Base of support:** the boundaries for which balance is maintained within the limits of stability (O'Sullivan, p 249)
- **Center of gravity:** the point at which the entire weight of the body may be considered to be concentrated (Kendall, et al, p 55)
- **Abdominal contraction/bracing:** contraction of the transverse abdominals is important for support during body mechanics and lifting mechanics; helps to prevent excessive stresses on spinal structures and supports posture (Kisner & Colby, p 392)

# Terminology- Introduction

- **Valsalva:** also referred to as “bearing down”; contraction of the transverse abdominals, internal obliques, and external obliques muscles increase intra-abdominal pressure (Kisner & Colby, p 392)

# Terminology

## Anatomy and Body Regions



Common Terminology

# Terminology- Squat

- A foundational movement pattern for body mechanics and lifting; requires movement at the ankles, knees, hips, and back



# Terminology- Hip Hinge

- A foundational movement pattern for body mechanics and lifting mechanics; requires stability of the core and legs with movement at the hips





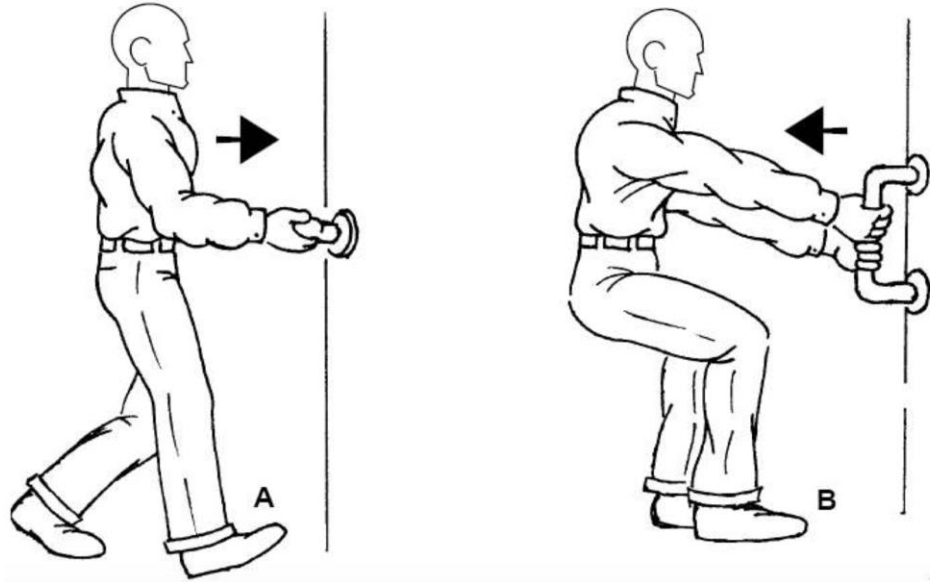
# Body Mechanics

In pushing and pulling tasks it is harder to start a body moving (the initial forces) than it is to keep the body in motion (the sustaining forces)

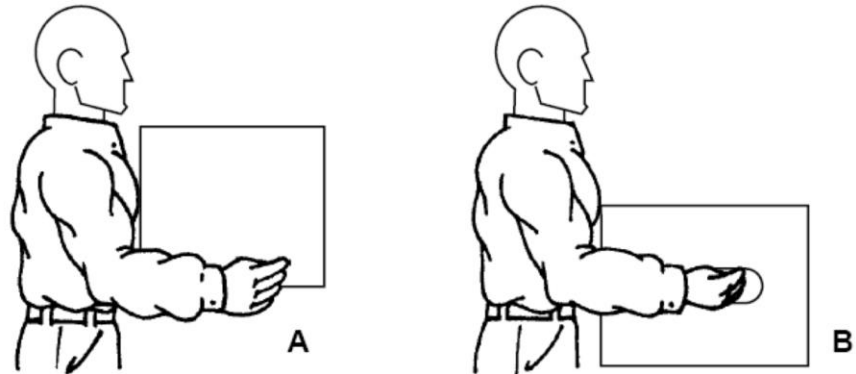
**Pushing:** When pushing the person should lean into the push. When pushing, arms should be flexed at the elbow, extended to about half their length, thereby allowing the operator to regulate effort as necessary by flexing and extending the arms (OSHA Bulletin, 2009)

**Pulling:** When pulling should lean in the direction of travel. When pulling, arms should be extended, then effort to move the load is transferred to the lower extremities. (OSHA Bulletin, 2009)

# Pushing and Pulling



**Carrying:** Carrying tasks have the potential to stress the arms, shoulders, and back in particular. To help minimize these stressors, keep the weight of the load acceptable; keep the load as close to the body as possible; and use both hands in a power grip (rather than a pinch grip) to hold the load (OSHA Bulletin, 2009).



# Lifting mechanics

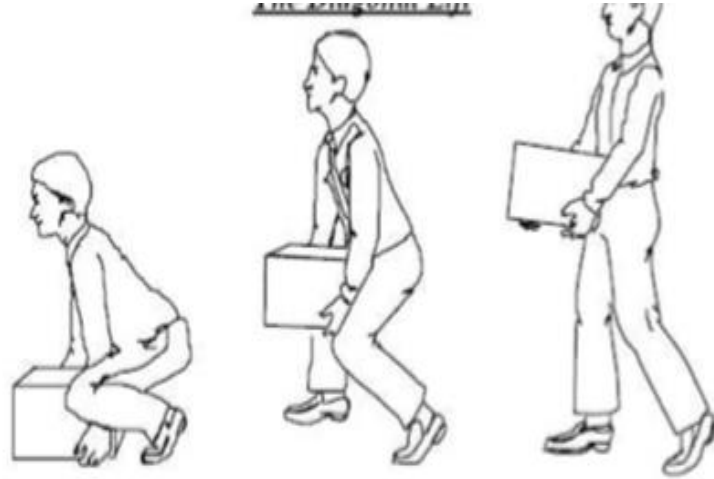
## Five general lifting **RULES**:

- Plan the lift
- Do not exceed the maximum acceptable load of the worker
- Keep the load as close to the body as possible
- Lift the load with smooth body motion
- When turning, do not twist.

# Types of lifts

- **Diagonal lift:** good for lifting medium weight objects from the floor or for lifting objects out of awkward spaces (OSHA Bulletin, 2009) .
  - Position yourself close to the item with your feet staggered widely around the item to be lifted
  - Pull in your belly muscles to stabilize your spine and place one foot ahead of the other in a staggered stance
  - Pick up the item, keeping it as close to your body as possible
  - Make sure you have a firm grip on the item so it does not slip and avoid twisting your trunk when carrying the object.

# Diagonal Lift

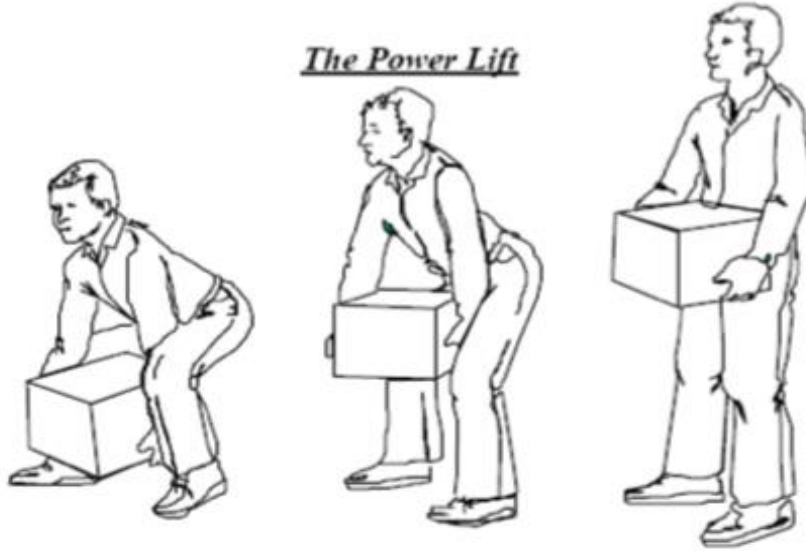


- **Power lift:** A power lift is good for lifting heavy objects off the floor.
  - Position yourself close to the item with your feet about shoulder width apart
  - Pull in your belly button to stabilize your spine and squat down by bending your knees
  - Pick up the item, keeping it as close to your body as possible
  - Make sure you have a firm grip on the item so it does not slip and avoid twisting your trunk when carrying the objects

(OSHA Bulletin, 2009)

# Power Lift

*The Power Lift*

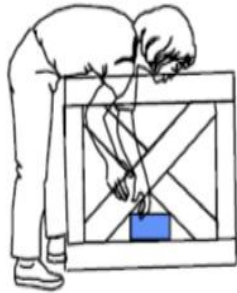




- **Golfers lift:** ideal for lifting light items from the floor.
  - Position yourself close to the item you will be lifting.
  - Reach down with your dominant hand while balancing on your opposite leg.
  - Gently tighten your belly muscles and keep your back straight as you pick up the item. Avoid twisting your trunk throughout the movement.

(OSHA Bulletin, 2009)

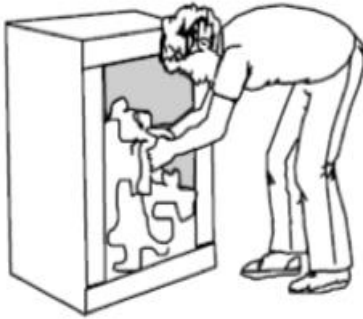
# Golfers Lift



The Golfer's Lift

# Other types of lifts

- **Half kneel lift**



- **Straight leg lift**



- **Squat lift**



Exercise to prevent workplace injury

# OPTIMIZING MOVEMENT

**Warm-up** is designed to prepare the individual for training or performance; can increase muscle temperature, core temperature, and blood flow

### **Guidelines for static stretching:**

- Get in a position that allows for relaxation
- Move to the point in motion where you feel mild discomfort, “strong but comfortable”
- Hold for 30 seconds, perform 3 times
- **PRECAUTIONS:**
  - Decrease intensity if you feel pain, shooting symptoms, or loss of sensation
  - Avoid combination movements, i.e. forward bend and rotation
  - If something doesn’t feel right, don’t do it

### **Guidelines for dynamic stretching:**

- Carry out 5 to 10 repetitions for each movement
- Gradually increase range of motion with each repetition
- Increase the speed of movement during additional sets if appropriate
- **PRECAUTIONS:**
  - Move with intention and without bouncing; movement should be controlled throughout
  - Do not overlook good technique for increasing range of motion or speed

# Static Stretch- Upper Back/Shoulder

Stand or sit with the arm across the body. Grasp the arm just above the elbow, gently pulling the arm across the body.



# Static Stretch- Seated Lumbar Flexion

While seated in chair with feet spread apart, gently lean forward letting your arms hang toward the ground until you feel a stretch in the lower back. Make sure to keep your buttocks in the chair and keep movements controlled. Return gently to upright position.





# Static Stretch- Standing Trunk Flexion

Begin in upright position. Gently reach your arms down the legs towards your feet, hinging at the hips until a comfortable stretch is felt in the back of the legs. Be sure to keep your knees straight, but not locked, throughout the movement.



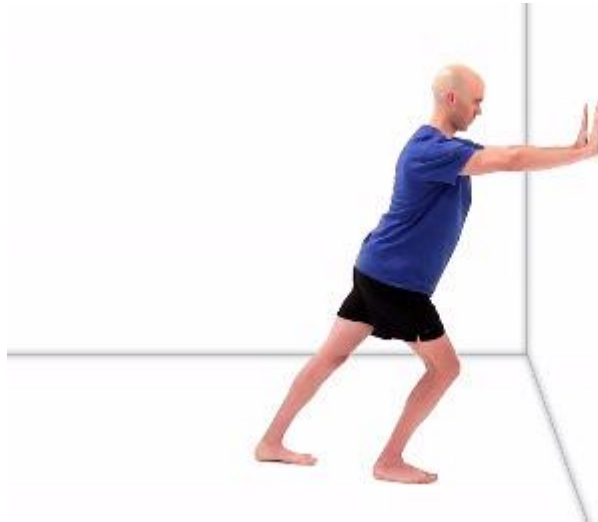
# Static Stretching- Hamstrings

Begin in upright position with heel in front of the body (on step if available). Slowly hinge at the hips until a stretch is felt at the back of the forward leg. If additional stretch is needed, bend knee of the leg in back.



# Static Stretch- Calf

Begin with hands on the wall and bring one leg behind the body, heel on the ground. Slowly bend the knee of the forward leg until a stretch is felt in the back leg. Be sure to keep the knee of the back leg straight.



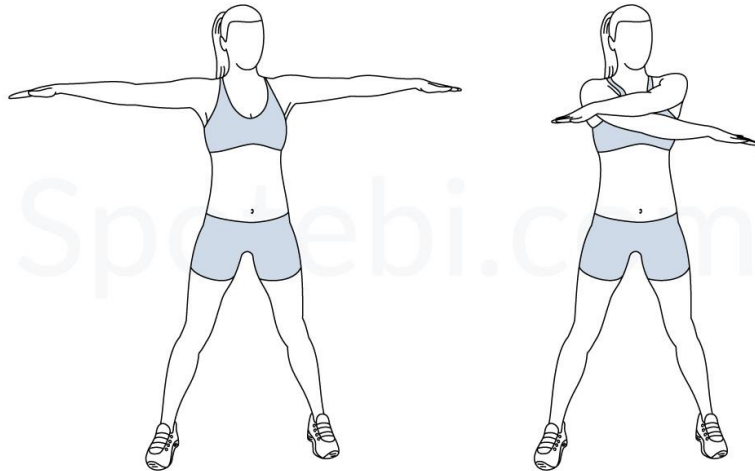
# Dynamic Stretch- Neck Rolls

Keeping shoulders relaxed, bend neck to the right and move in a counterclockwise direction forward, left, then back. Continue movement for number of desired repetitions. Next, bend neck to the left and move in a clockwise direction, forward, right, then back. Continue movement for number of desired repetitions.



# Dynamic Stretch- Arm Swings

Stand upright with arms out to the side at shoulder level. Keeping trunk and head facing forward, swing arms across body, and then back. Alternate movements gradually increasing in range with each repetition.



# Dynamic Stretch- Hip Flexion & Knee Flexion

Begin in upright position, holding onto stable item for support if needed. Keep hips level as you raise leg up to the level of the hips, bending at the knee. Slowly return to starting position and perform on opposite side. Be sure to keep hips level and avoid sway. If unable to raise leg to hip level, lower height to pain free, balanced level. Continue to alternate for required repetitions.



# Dynamic Stretch- Ankle

Begin in upright position, holding on to stable item for support if needed. Push through toes to raise heels from floor and slowly return to starting position. Be sure to push up, not forward; try to limit ankles falling inward or outward with movement.



# Physical Therapy Resources



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[www.ptforpain.org](http://www.ptforpain.org)

Why see a PT?

The value of PT

Patient resources

Find a PT



# Questions



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