

# **SPRING BACK!** Preventing and Managing Back Injuries in the Garden



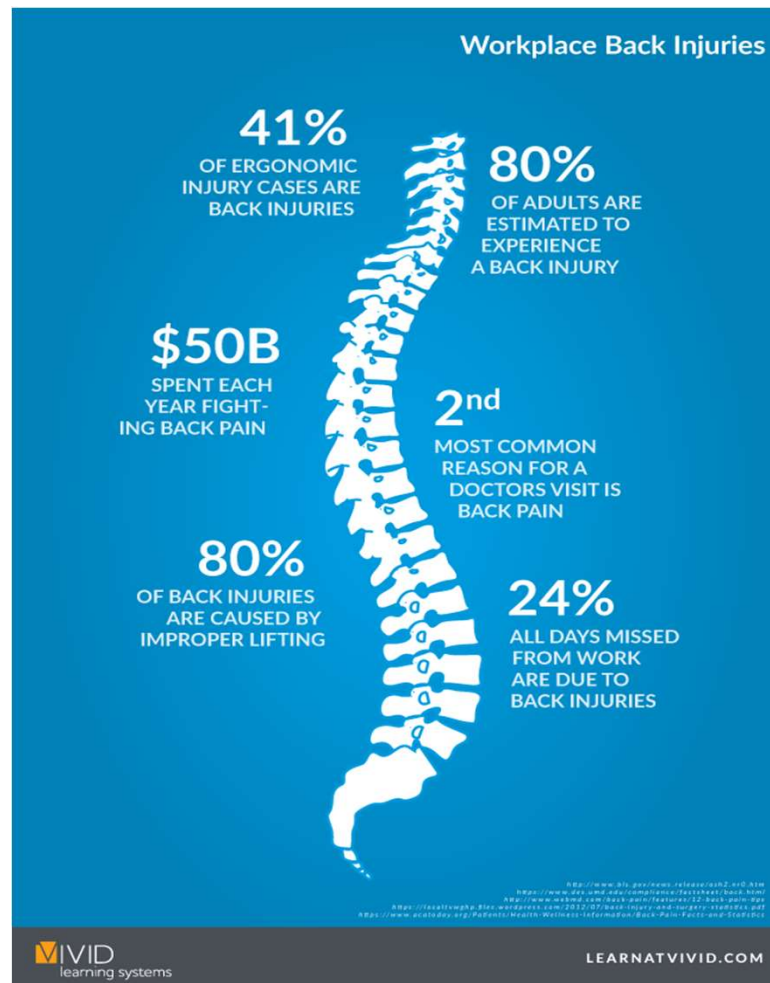
# Objectives of Lecture

- Overview of basic low back anatomy
- Overview of basics of low back function
- Discussion of factors influencing low back injury
- Proper postural positioning
- Proper body mechanics and lifting techniques
- Equipment aides in gardening
- Low back exercises
- Questions on proper lifting techniques

# The Back Injury Problem

- Very common injury especially in the spring when activity outside increases
- Effects 80% of the adult population in the U.S.
- Can be linked to sedentary lifestyle, stressful activities outside, in the home or at work
- Accounts for 40% of all recorded workplace absences
- Caused by cumulative effect of things we do every day, typically not one episode!

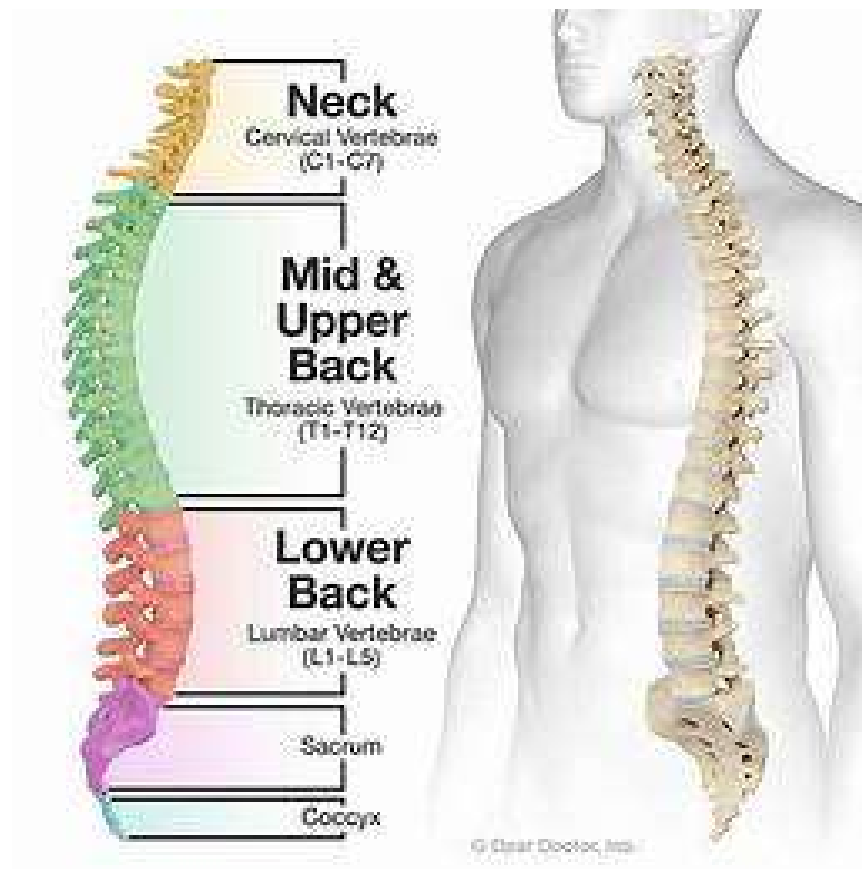
# Back Injuries, A Big Problem!



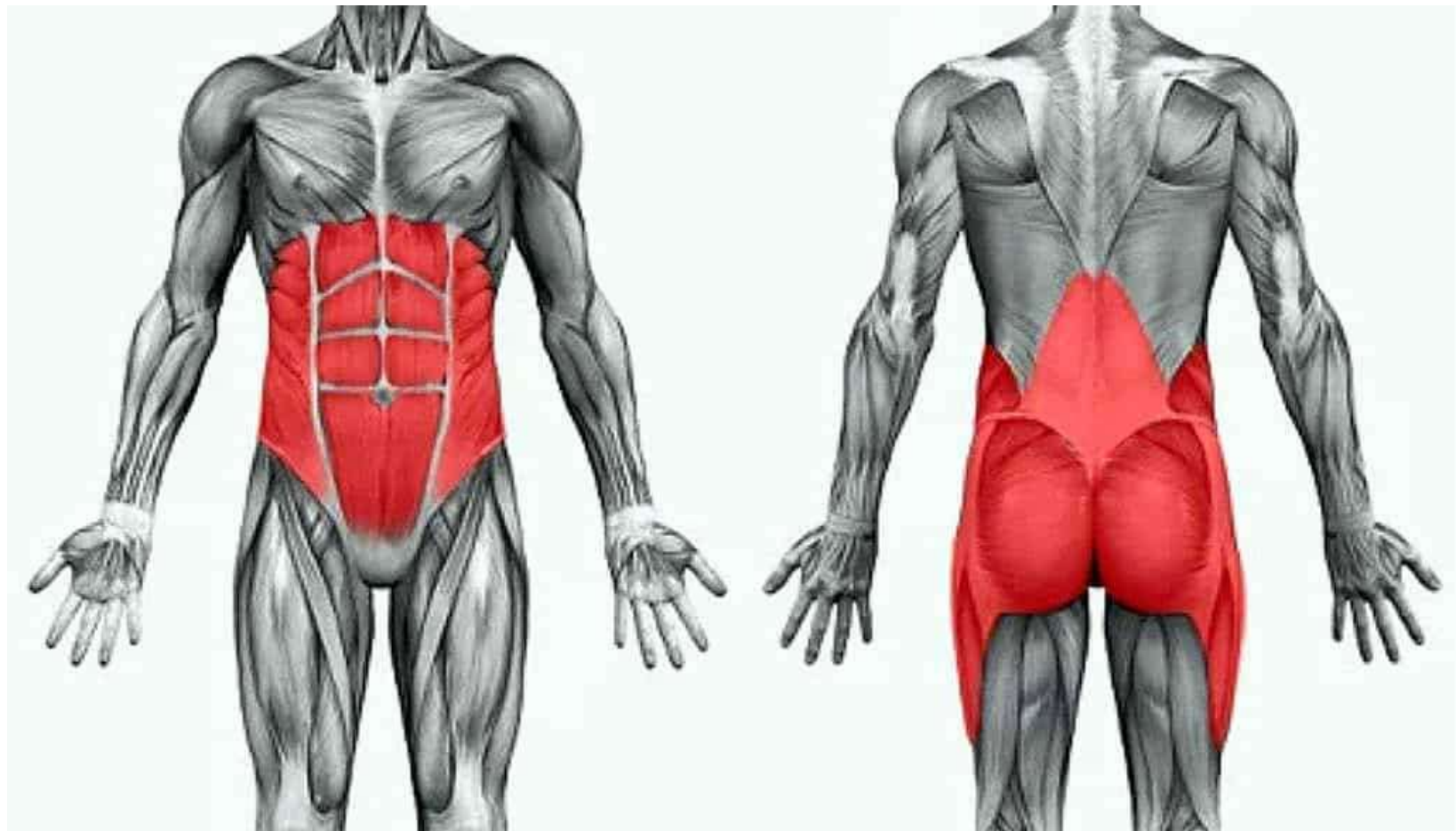


# Back Anatomy

# Human Spine



## CORE MUSCLES – STABILIZERS NOT MOVERS!



# Low Back Function

The Spinal Column has 3 main functions:

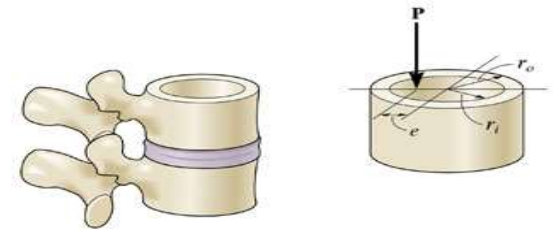
- 1) **STRENGTH:** To be strong in gravity.  
To resist the compressive loads of our weight and to successfully transmit our weight loads to the legs
- 2) **FLEXIBILITY:** To be flexible as to allow us to perform life activity:  
bending, stooping, lifting, gardening
- 3) **PROTECTION:** To Protect the nerves of the spinal cord





# Low Back Function Cont...

- The strongest structure is a **column**. This is why engineers use columns to support bridges and buildings. However, a poor design for the spine because columns limit motion (bending/turning).
- The most efficient structure for allowing movement is a 90 degree lever, like a lug-wrench.
- The spinal column is a compromise between **strength** (straight column) and **mobility** (90 degree lever), with a series of 3 curves of about 45 degrees each. Without these curves, spinal motion would be extremely difficult. These curves are physiologically important and considered to be normal.



# Flexibility to bend, support with structure



# Factors Causing Back Injuries

- **Poor posture** – STATIC POSITION (sit/squat/stand) or MOBILE POSITION(lift/twist/reach)
- **Faulty Body Mechanics** – how we lift, push, pull or move objects
- **Stressful Living and Working Habits** – staying in one position too long
- **Loss of Body Flexibility** – getting stiff as we age or not maintaining good mobility
- **Poor Physical Condition** – loss of strength and endurance needed to perform activity



# **Improper Postural Positions**

## Positions that are too low or require prolonged forward bending



## Positions that require prolonged backward bending





# Activity which is too far away



## Activities which are performed in confined areas or jobs which require twisting





# Activities which require prolonged standing on hard, concrete surfaces



- The low back muscles play a significant role in helping to maintain the standing position. These muscles fatigue without occasional relief

## Work stations which require sitting or standing in a static position for prolonged periods of time

- When work requires intense concentration or does not allow movement, the back can become stressed because of fatigue or tenseness.



## **Work which requires prolonged sitting, particularly with back unsupported**



## Jobs which require frequent material handling



- Though this may not be a problem area if proper body mechanics are used, anytime lifting or carrying objects is needed there is potential for a problem (use mechanical devices when possible)

## Jobs in which awkward or oversized loads are moved



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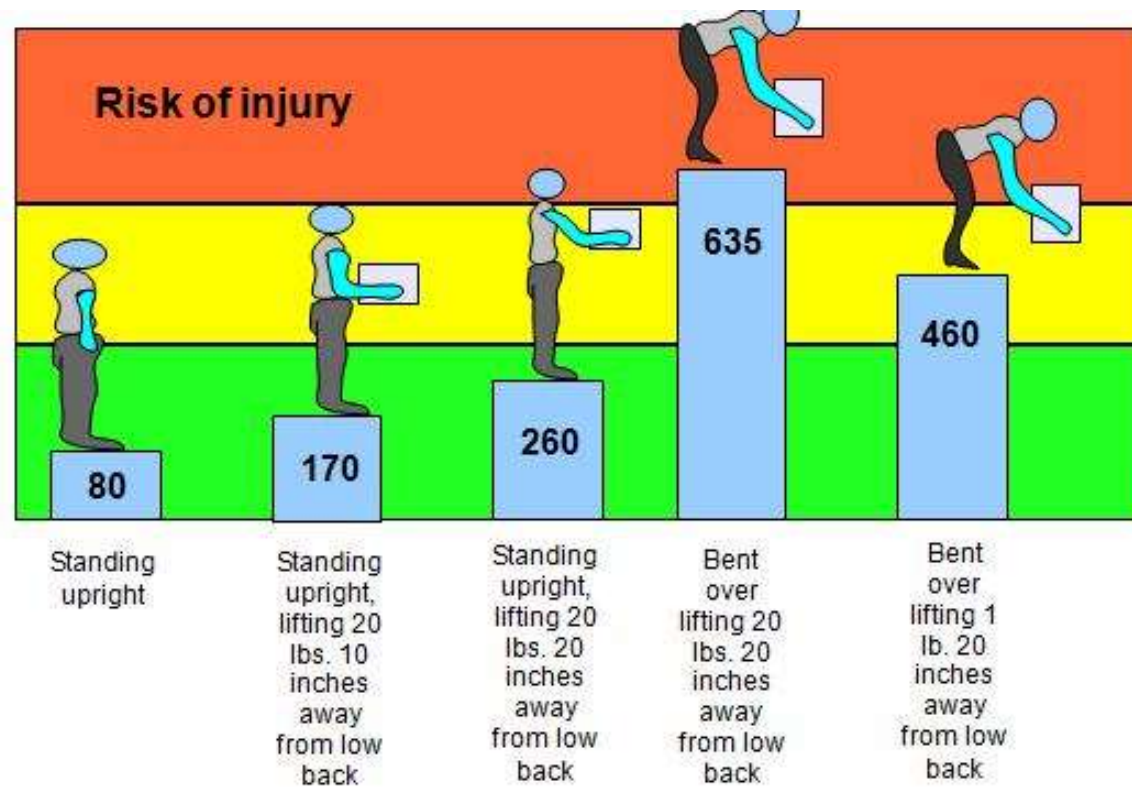
# **Body Mechanics and Lifting Techniques**

# Common Mistakes

- **Lifting With the Back Bent Forward and the Legs Straight.** This places significant stress on the support structures of the low back.
- **Using Fast Jerking Motions.** Lifting objects which are hard to grip, working in an area with slipping and tripping hazards, or trying to work too fast can prevent smooth, safe technique.
- **Bending and Twisting at the Same Time.** Not pivoting the feet or squatting to lift causes maximum stress on the structures of the low back.
- **Handling the Load Too Far Away.** Failure to bring the load close to the body is another cause of injury. The stress increased 7 to 10 times when a load is at arm's length.



# Compressive Force





# Rules of Good Body Mechanics

- **Test the Load.** Prior to lifting or moving an object, test the weight of the load to make sure it can be moved safely. Use an assistive device if necessary.
- **Plan the Move.** Check the path of travel or destination of the load to make sure it is clear. Clear the path before picking up the load.
- **Use a Wide, Balanced Stance with One Foot Ahead of the Other.** A solid base of support reduces the likelihood of slipping and jerking movements.
- **Keep the Lower Back in its Normal Arched Position while Lifting.** Bend at the knee or hips. With the back arched, the forces are more evenly distributed on the support structures.

# Rules of Body Mechanics Cont.

- **Bring the Load as Close to the Body as Possible.**  
This keeps your back from acting as the fulcrum and reduces the stress.
- **Keep the Head and Shoulders up as the Lifting Motion Begins.** This helps to keep the arch in the lower back.
- **Tighten the Stomach Muscle as the Lift Begins.**  
This causes the abdominal cavity to become a weight bearing structure, thus unloading the spine.

# Rules of Body Mechanics Cont.

- **Lift With the Legs and Stand up in a Smooth, Even Motion.** Using the strength of the legs to straighten the knees and hips as the lift is completed decreases the lower back stress.
- **Move the Feet (pivot) if a Direction Change is Necessary.** This eliminates the need to twist at the waist, thus significantly reducing the stress on the supporting structures of the back.
- **Communicate if Two or More Individuals are Involved in the Movement.** This reduces the likelihood of an error which could result in sudden or jerking movements.

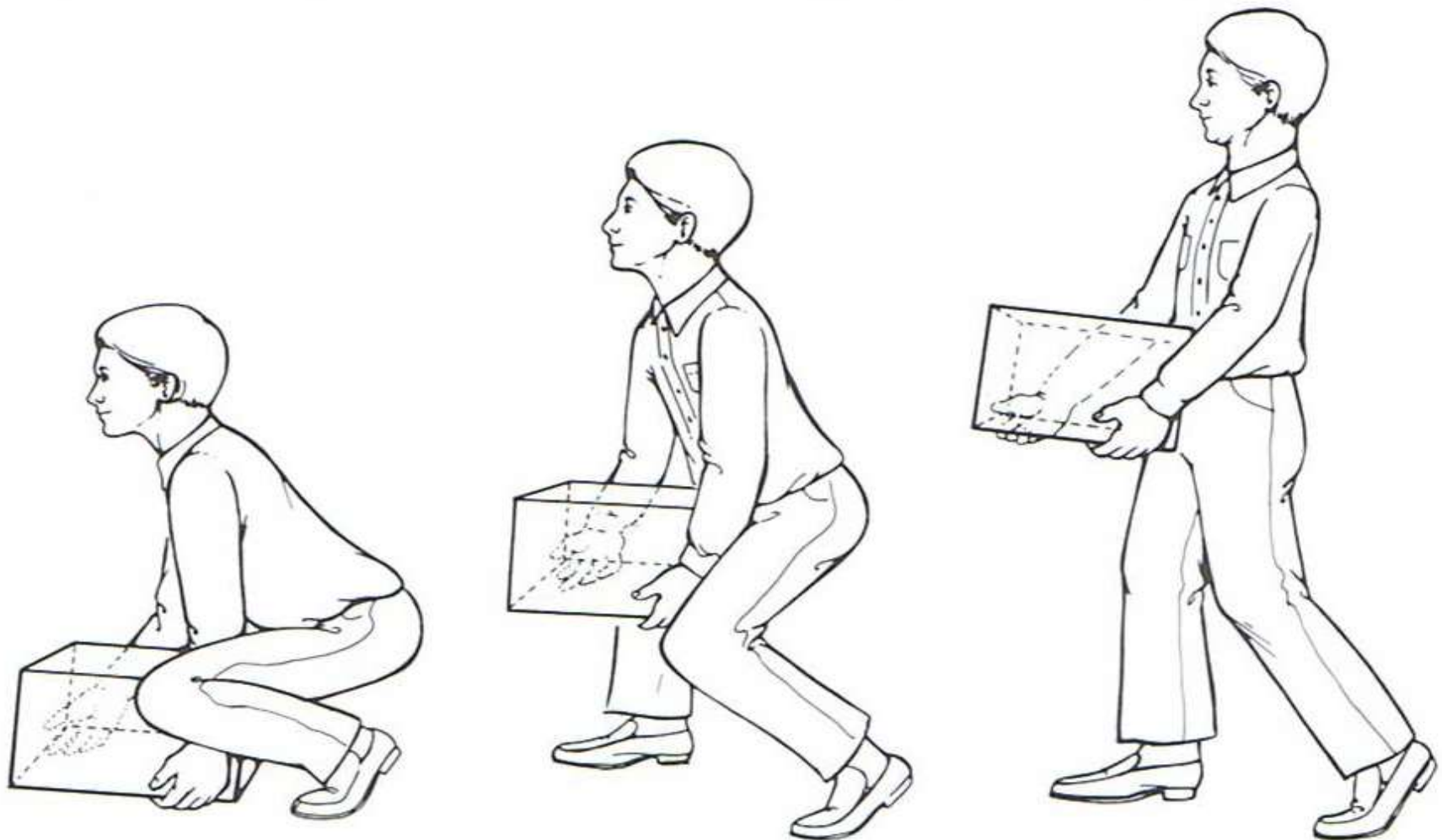
# Proper Lifting

LIFTING DO'S & DON'TS			
<p><b>DO LIFT AS A TEAM</b></p>  <p>Do lift bulky or heavy loads as a team. Doing so is smart and the safe way to work.</p>	<p><b>DO TURN WITH LEGS</b></p>  <p>Do move your legs and feet when turning or lowering the load. Avoid twisting at your waist.</p>	<p><b>DO USE YOUR LEGS</b></p>  <p>Do lift the load using your powerful leg and buttocks muscles. Your feet should be wide apart, head and back upright. Keep abdominal muscles tight and the load in close.</p>	<p><b>DO USE EQUIPMENT</b></p>  <p>Do use equipment like hand trucks, dolly's, or forklifts to do the heavy lifting. It's much less work and less risk of injury.</p>
<p><b>DON'T LIFT BULKY LOADS ALONE</b></p>  <p>Don't lift bulky or heavy loads alone. Doing so puts great stress on your low back muscles and spine.</p>	<p><b>DON'T TWIST WHEN LIFTING</b></p>  <p>Don't twist when lifting, lowering, or carrying any load as this increases your risk of back injury.</p>	<p><b>DON'T USE YOUR BACK</b></p>  <p>Don't lift the load with your rear end high and your lead low. Use your leg muscles, not your weaker low back muscles.</p>	<p><b>DON'T LIFT HEAVY LOADS</b></p>  <p>Don't lift heavy loads when you can use equipment. It is less work and less stress on your low back.</p>

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# Lifting Techniques

# Diagonal Lift



# Power Lift

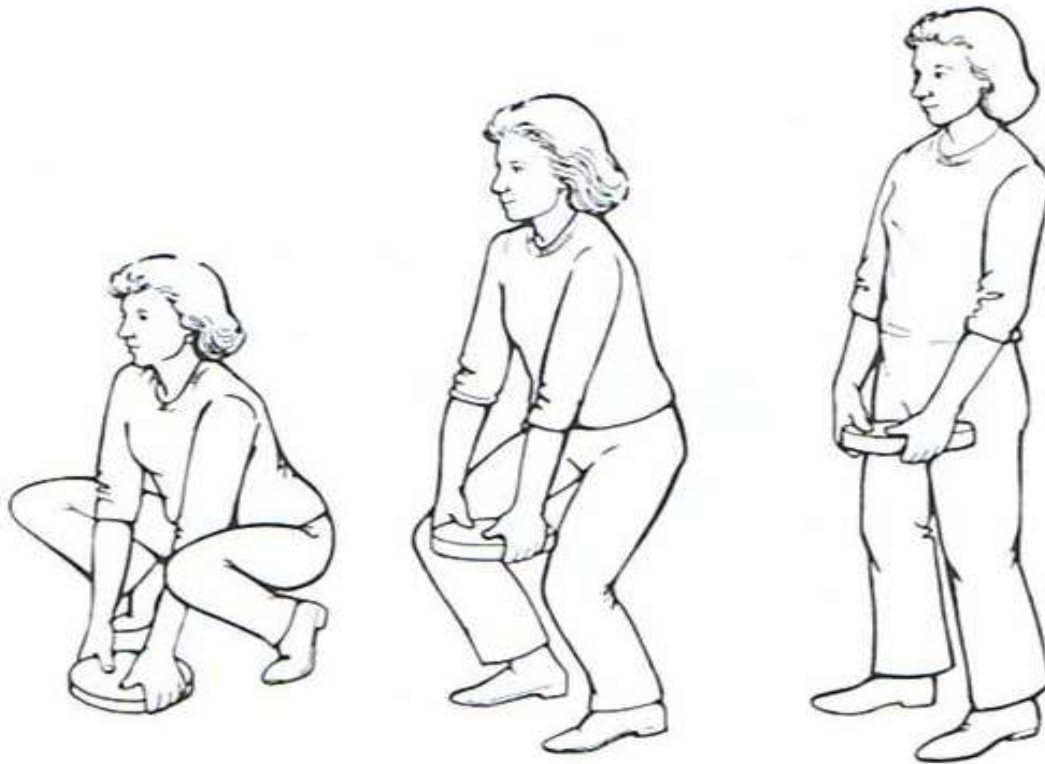








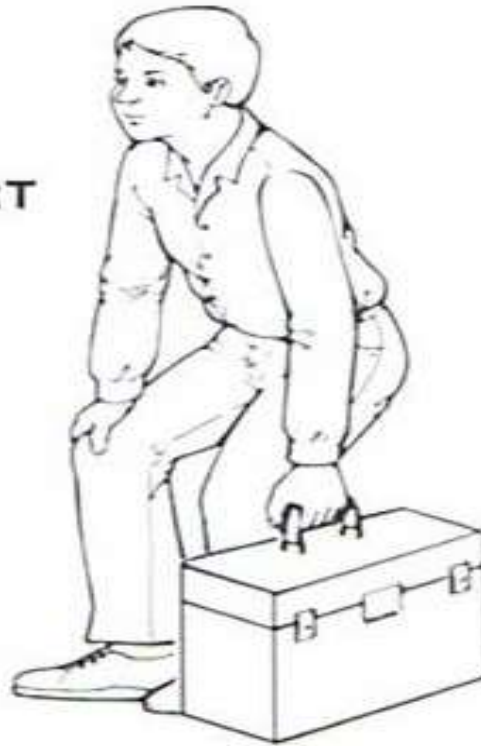
# Deep Squat Lift



# Squat Lift With Support



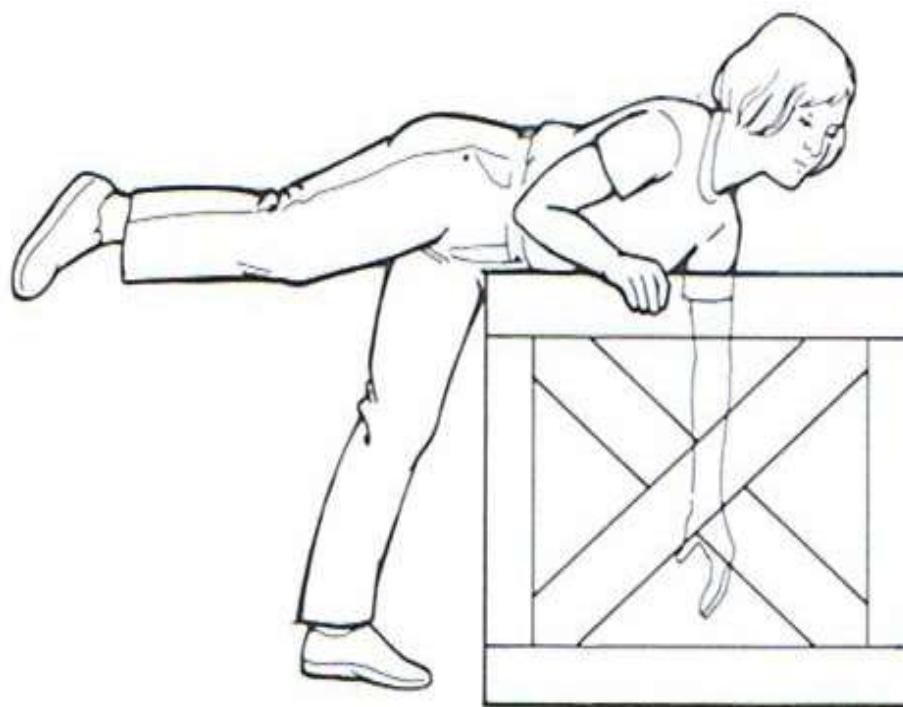
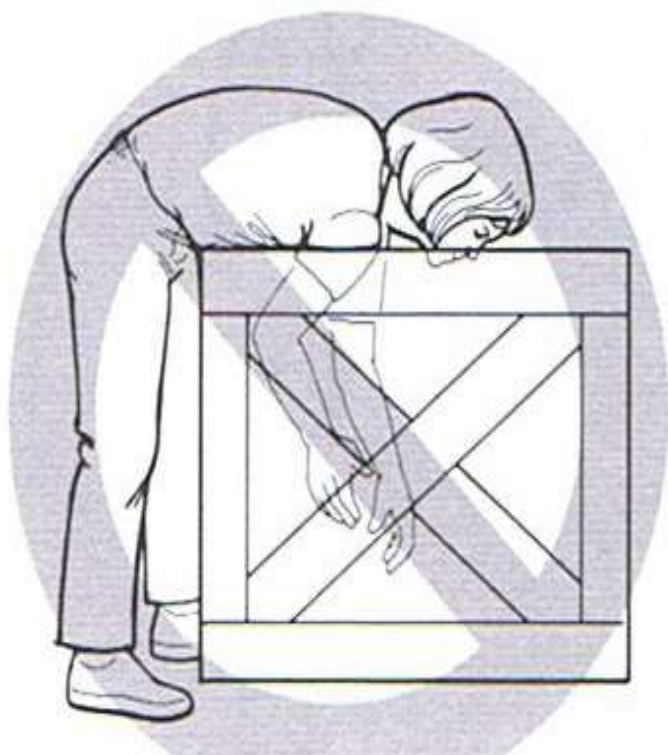
WITH SUPPORT



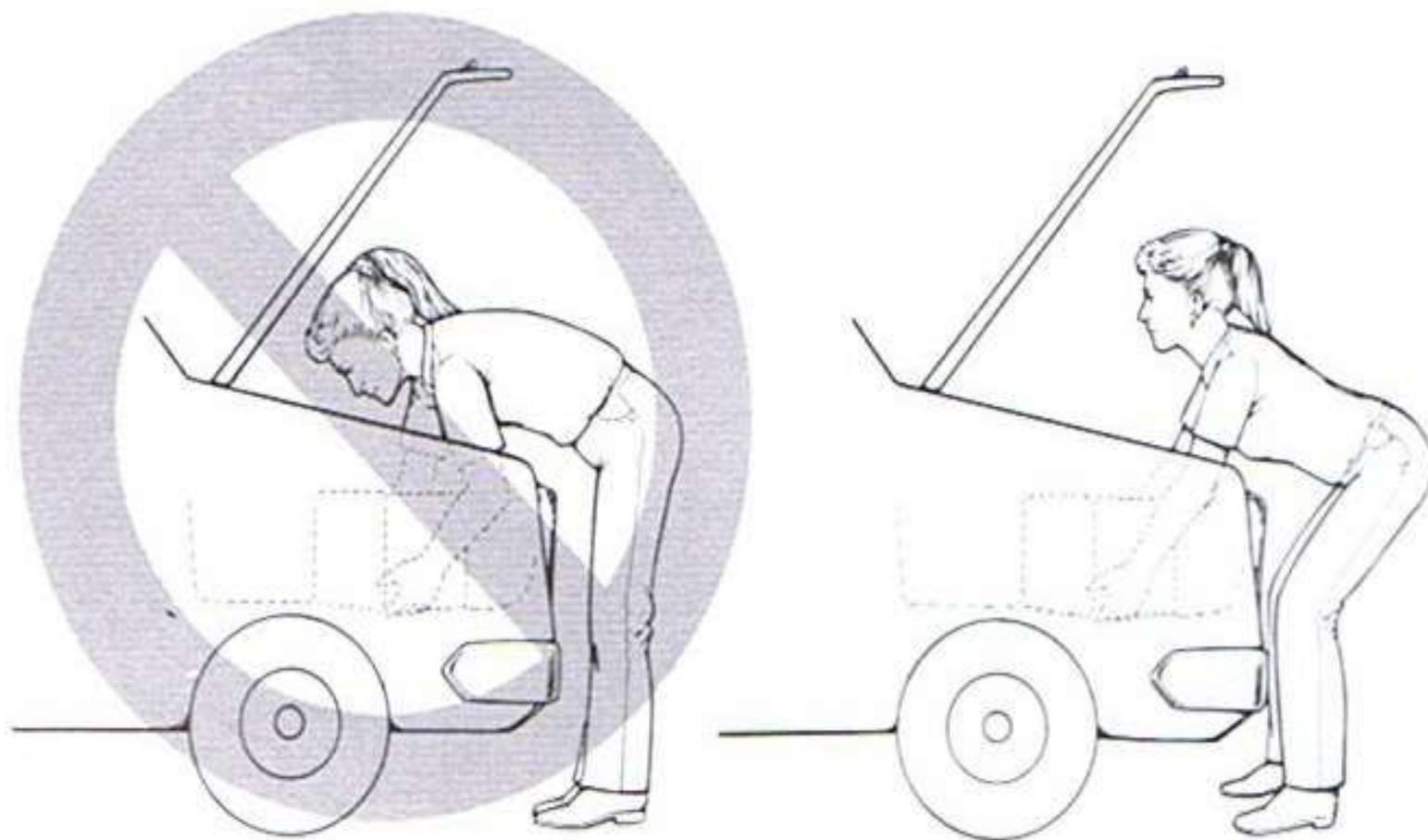
# Squat Lift Without Support



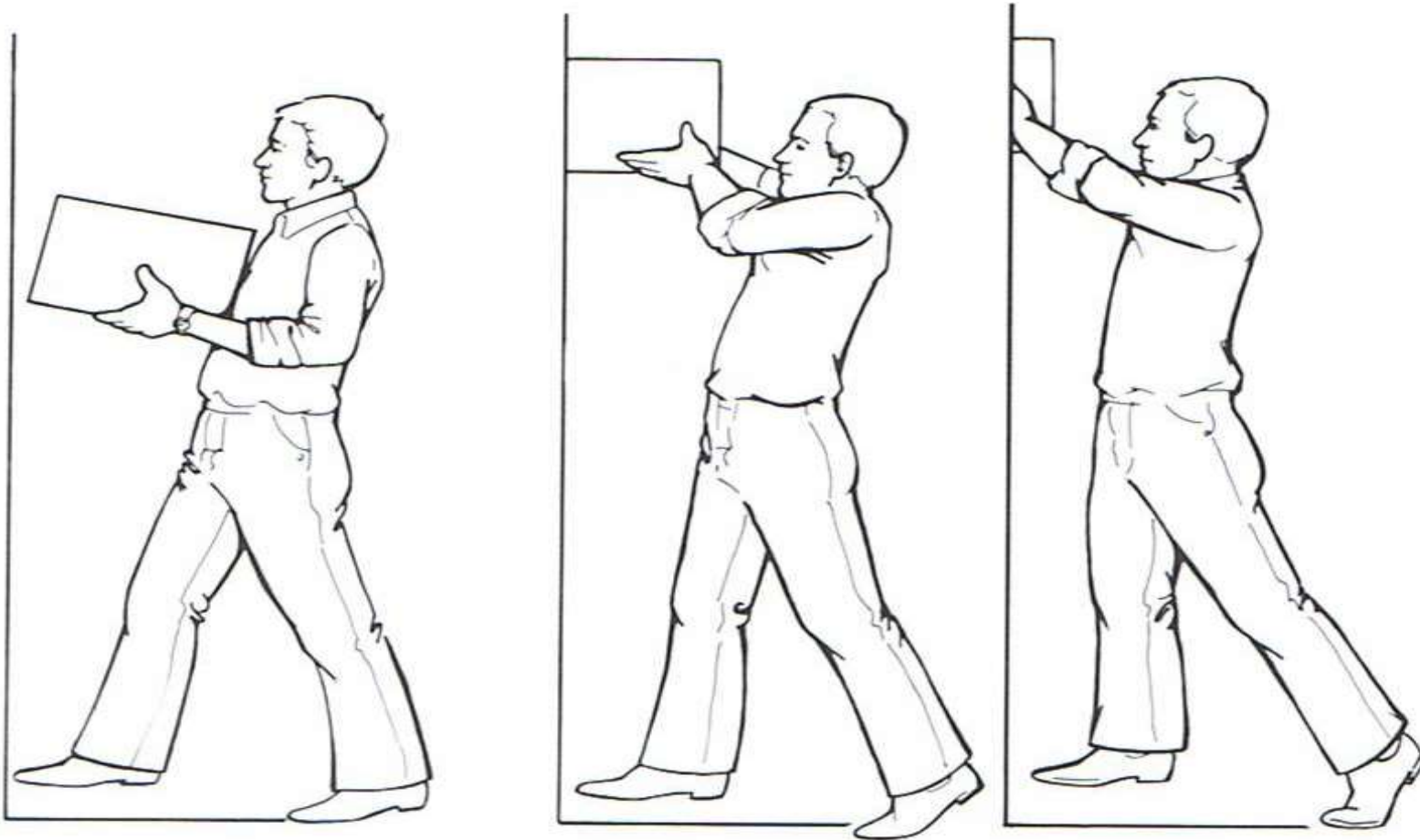
# The Golfer's Lift



# Straight Leg Lift



# Overhead Lift



## So, How Do I Prevent Back Injuries?

- **PREPARE** your body for gardening by doing warm-up exercises
- **STRENGTHENING** your core will help protect your back
- **POSITION** yourself to avoid back injury by paying attention to how you bend and lift; position materials appropriately
- **TOOLS** specialized for gardening can make a big difference
- **BREAKS** and **STRETCHING** can make a huge difference

# TIPS TO AVOID BACK PAIN WITH GARDENING

- **Start Small & Set Your Limit**
  - Set a schedule so you are spreading out your tasks.
  - Be realistic about how much you can take on and when you need help!
  - If you are unsure of what is too much or too long, you may find it beneficial to speak to a **physical therapist**, who can assist you in making a plan and discussing which gardening tasks are safe to perform.



# TIPS CONT.

- **Find The Right Tools For You**
  - There are a variety of helpful tools and alternatives to gardening that can prevent back pain.
  - If bending over causes extreme amounts of pain try using long-handled tools to avoid bending to the ground, or a raised garden bed so you won't need to worry about low plants.
  - Other essential tools for gardeners with chronic pain include protective gloves, a thick kneeling pad, sturdy and lightweight hand tools, as well as a garden caddy or wagon that can easily be pulled around.











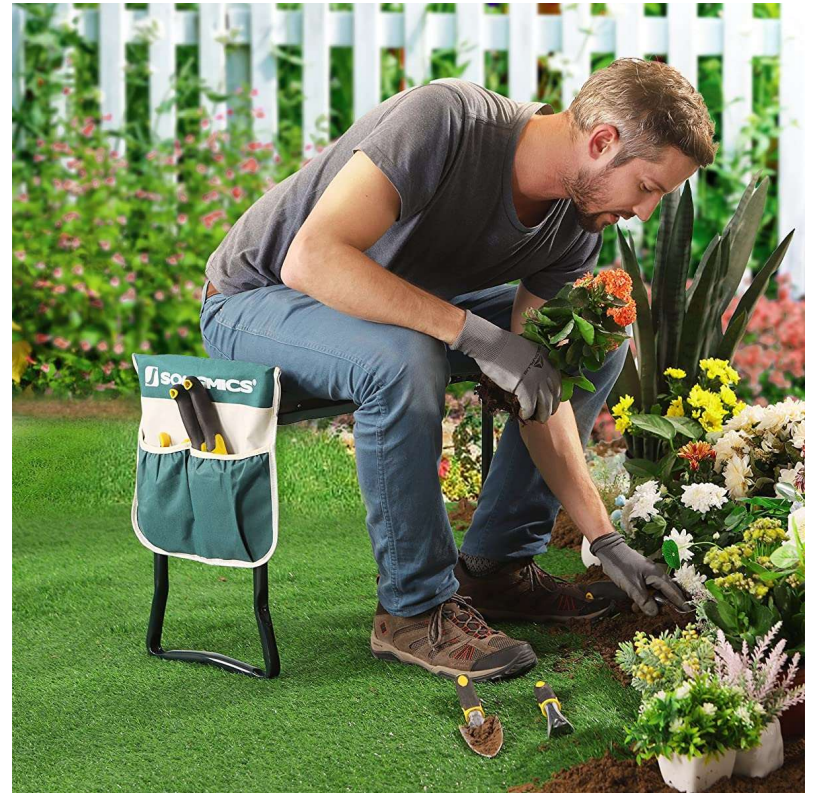
- **Size Down Your Garden**

- Rather than a large number of plants, try keeping only things that you really care about, or vegetables that you know will be put to use.
- Downsize your garden with more resilient crops. Grow things that will survive without constant care and attention.

# TIPS CONT.

- **Use Any Extra Help & Support You Can Get**
  - Ask for help with the yard work, or garden tasks that are extra painful for you.
  - Wear a supportive wrap, brace, or splint to help limit the amount of pain while you're working outdoors. Whether you are dealing with knee, back, or wrist pain - there is a supportive brace that will work for you!









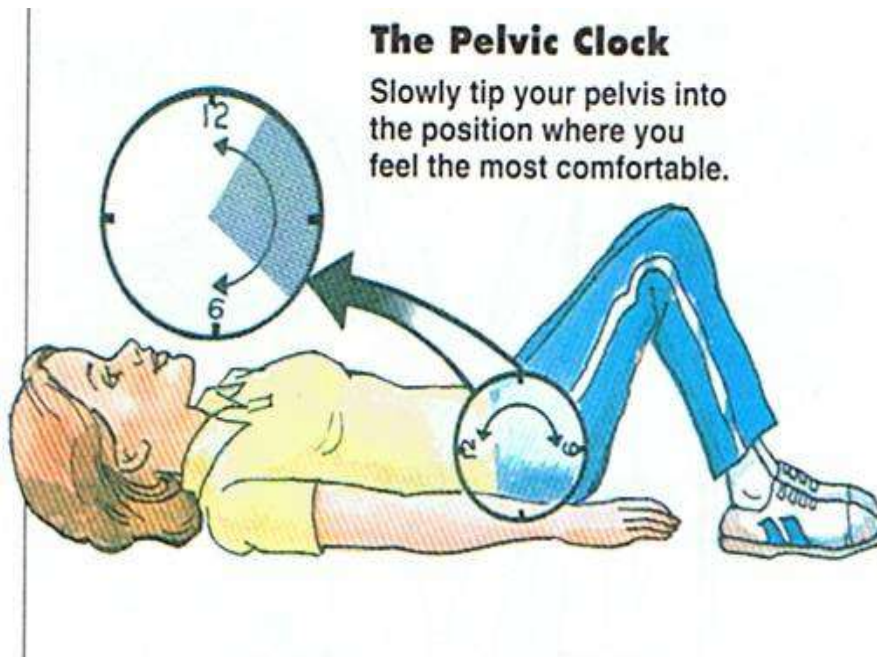


# Exercise

- Stretching
- Strengthening
- Stabilization



# Pelvic Clock



## The Pelvic Clock

Slowly tip your pelvis into the position where you feel the most comfortable.

## Your Position of Comfort

Purpose: To find the most comfortable position for your own body.

1. Lie down with knees bent and feet flat on floor. Imagine a clock on the back of your pelvis.
2. Slowly tip your pelvis all the way down to "6," then up to "12," until you find the position where you feel most comfortable. That's your unique position of comfort. Use the pelvic clock to find your position of comfort before exercising.

## Low Back Stretch



Purpose: To increase mobility in the spine.

1. Begin by resting on your hands and knees, keeping your entire back straight, including your neck.
2. Shift your weight forward, arching your back slightly. Then shift your weight backward, moving your buttocks toward your heels, rounding your back, and dropping your head. Hold each position for 10 seconds. Repeat 5 times.

## Partial Sit-up



Purpose: To strengthen abdominal muscles.

1. Lie on your back with both knees bent and feet flat on floor. Find your position of comfort.
2. Slowly raise head and shoulders off the floor and extend hands to knees (or support neck with hands). Hold as long as you can and slowly increase holding time to 3 minutes.



# Oblique Abdominal



Purpose: To strengthen oblique abdominal muscles.

1. Lie on your back with knees bent, feet on floor, and hands laced behind neck. Find your position of comfort. Tighten stomach muscles.
2. Bring right knee toward left elbow, keeping low back still. It's not necessary to touch your knee. Return to starting position and switch sides. Work up to 25 repetitions on each side.

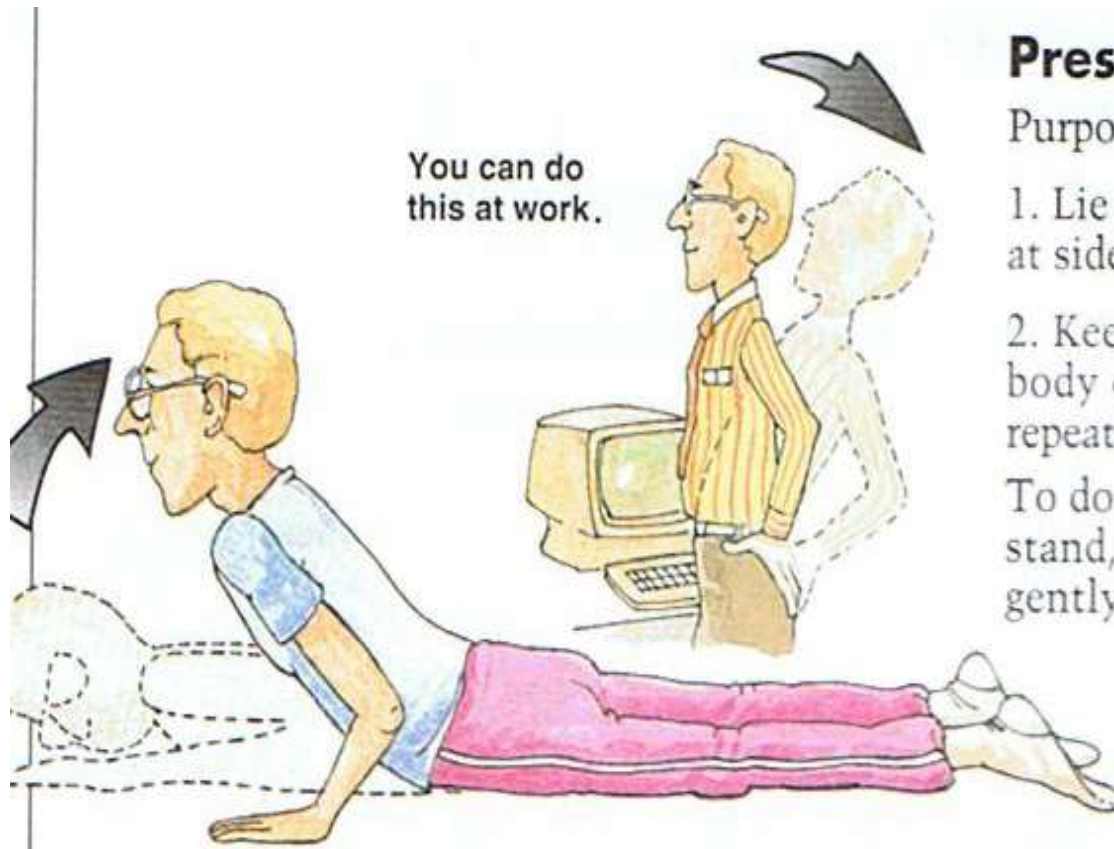
# Hamstring Stretch



Purpose: To stretch hamstring muscles.

1. Lie on your back and find your position of comfort. Keeping one leg flat on the floor, raise the other leg with the knee bent. Grasp bent leg behind the thigh with both hands. Tighten stomach muscles.
2. Extend the raised leg at the knee, continuing to hold the back of the thigh and keeping your foot in a relaxed position. Relax leg and repeat 5 times. Switch to other leg. Slowly increase holding time to 30 seconds.

# Press Up/Standing Back Bend



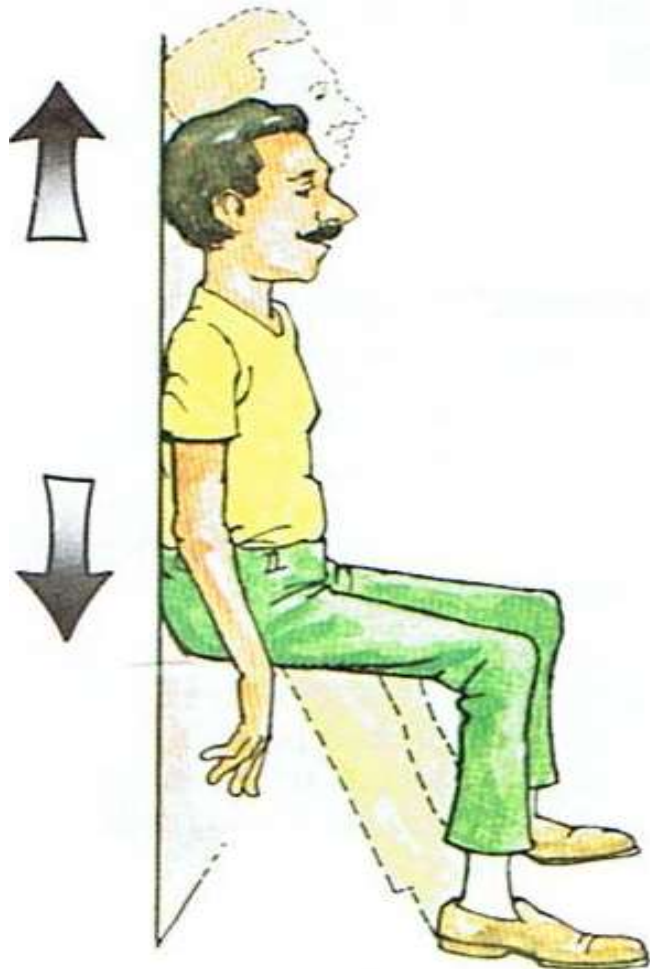
## Press Up/Standing Back Bend

Purpose: To increase flexibility of the spine.

1. Lie on stomach and place hands on floor at sides of shoulders, elbows bent.
2. Keeping elbows bent, slowly push upper body off floor. Keep hips on floor. Relax, repeat 10 times, lifting higher each time.

To do this at work as a standing back bend, stand, press palms against lower back, and gently arch back.

## Wall Slide

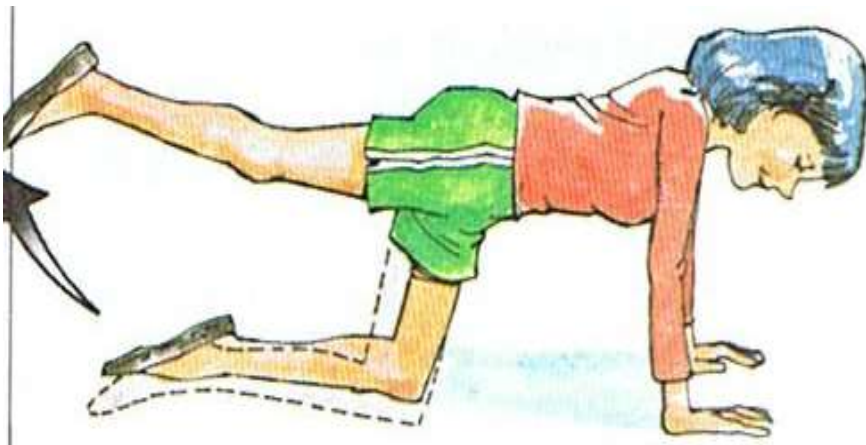


Purpose: To strengthen back, hip, and leg muscles.

1. Stand with back against wall and feet spaced shoulder-width apart. Find your position of comfort.
2. Slide down wall. When hips and knees are bent to  $80^{\circ}$ – $90^{\circ}$  angle, hold for count of 5 and slowly slide back up. Repeat 5 times. Work up to three-minute holds.



# Arm and Leg Reach



Purpose: To strengthen muscles of back, buttocks, and legs.

1. Start on hands and knees. Find your position of comfort.
2. Extend one arm straight out in front of you and hold it parallel to floor for a count of 5. Then extend one leg straight out behind you and hold it parallel to the floor for a count of 5. Don't let back, head, or stomach sag, and try not to arch back. Return to starting position. Repeat 5 times, then switch arms and legs.

# Chin Tuck



## Chin Tuck

Purpose: To stretch chest, neck, and shoulder muscles.

1. Sit or stand upright.
2. Without lifting chin, glide head straight back. You know you're doing this exercise right if it gives you the feeling of a double chin. Hold for 20 counts and repeat 5–10 times

# Range of Motion



Purpose: To stretch and relax neck muscles.

1. Sit or stand upright.
2. Tilt head slowly toward one shoulder. Relax and let gravity pull head down to stretch neck. Hold for 10 counts, rest briefly, then switch sides. Repeat 5–10 times on each side.



# THANK YOU!

## QUESTIONS??

**How do you know you are a Master Gardener?**

- There is a decorative compost container on your kitchen counter.
- You would rather go to a nursery to shop than a clothing store.
  - You prefer gardening to watching television.
- You plan vacation trips to arboretums and public parks.
- Dirt under your fingernails and calloused palms are matters of pride.