



Appalachian STEPS

ERGONOMICS AND BACK SAFETY

WHY?

- Personal health and safety
 - 54% of injuries in this field for the 24-44 year old males in this industry
 - Back, shoulder and neck injuries make up over 50% of all injuries related to Musculoskeletal injuries(MSD's)
- Cost to your company
 - Most injuries are back, shoulder and neck, resulting from lifting, twisting, pushing, pulling, etc.
 - Second highest are slips, trips and falls

WHAT?

- Learn what causes injuries and pain
- Learn techniques and programs to make job easier
- Learn proper lifting techniques and body mechanics
- Learn proper stretches and warm up techniques

Recently, we've seen the automation of areas that previously required manual, human labor. While oilfields may always be labor intensive in one aspect or another, there are various aspects of the trade that can greatly benefit from robotic or mechanical automation. This includes:

- Moving meters of heavy pipe, particularly from lower areas to higher ones
- Automated power slips, which can move without worker interference. Note that manual slips can weigh up to 250 pounds, which can incur a whole host of MSDs and other work-related issues.

Revising administrative procedures to ensure a safe, efficient, and hazard-free workplace. This includes:

- Regular maintenance scheduled (and budgeted for)
- Regular cleaning, to ensure a clean, safe work environment devoid of hazards such as slippery surfaces or toxic waste
- Regular, consistent rotation of workers, especially to avoid excessive fatigue, and thus, accidents
- Sufficient equipment, including work boots with thick soles, cushioned gloves, hard hats, and the like

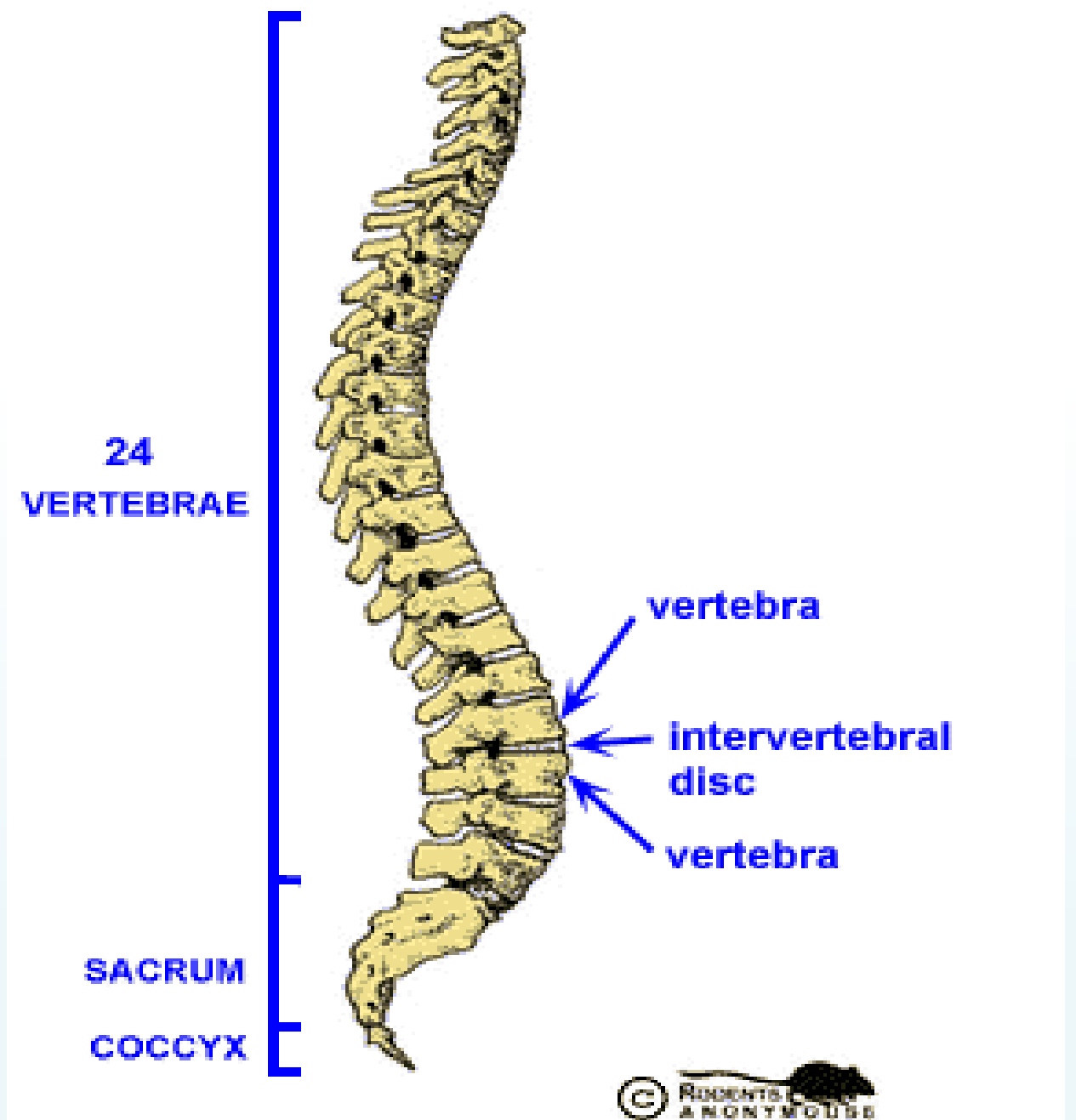
[LIGHTER SIDE]



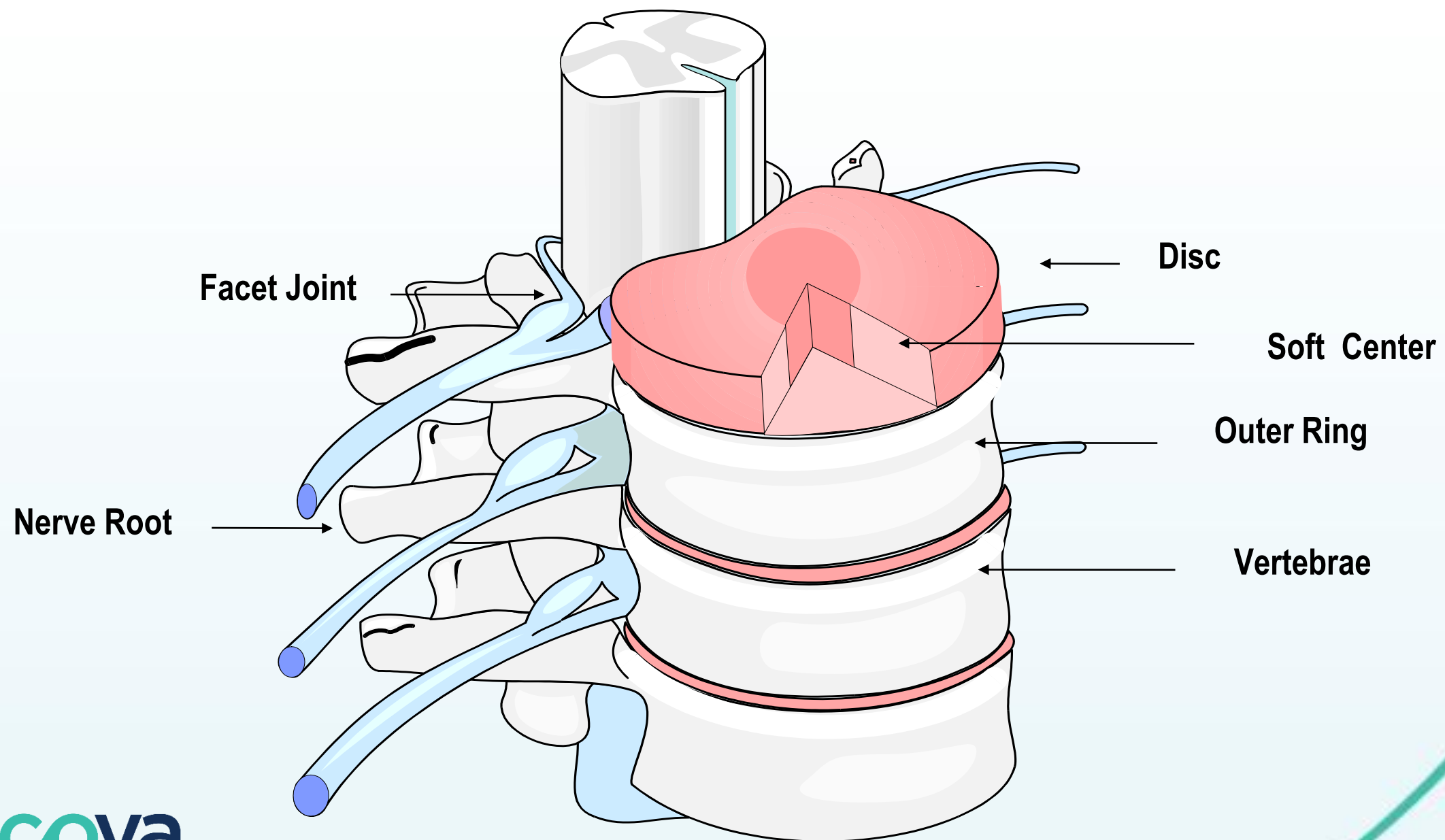
"I was so tired at work today that the other nurses had to revive me with CPR...coffee, Pepsi and Red Bull."

HUMAN SPINE

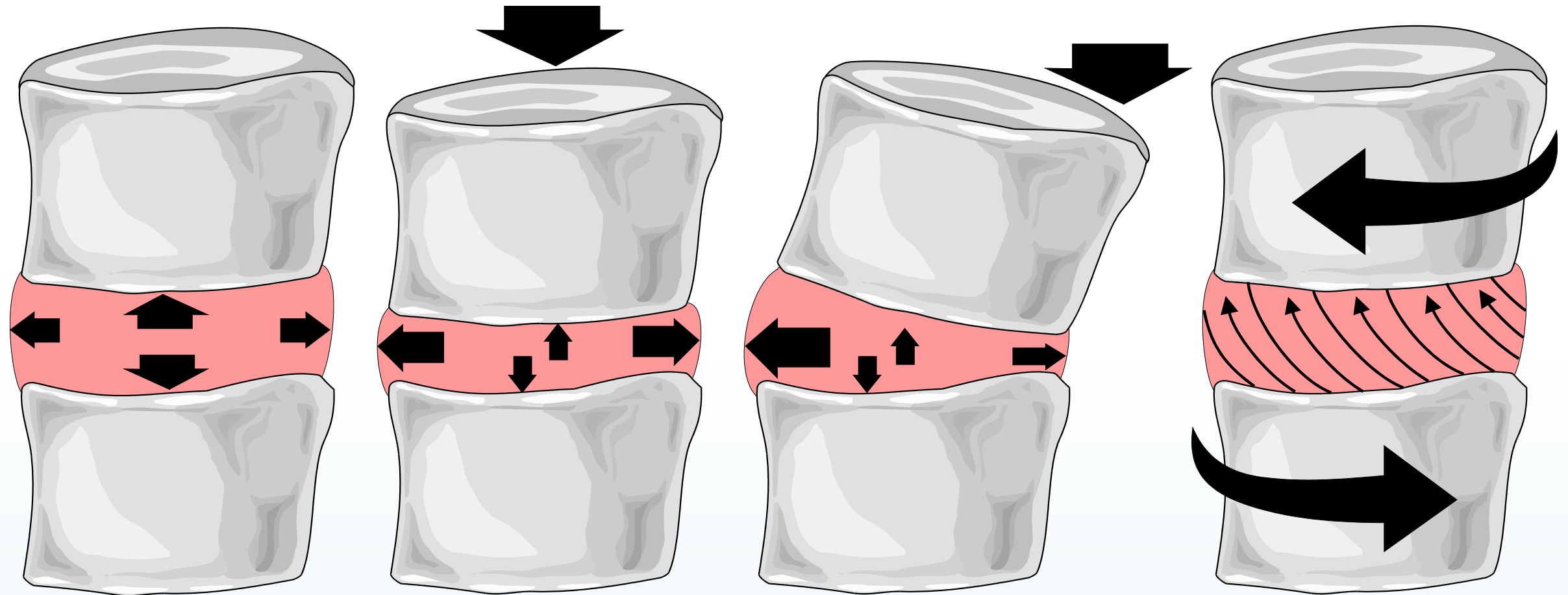
- It's all about pressure



SPINAL COLUMN DETAILS



SPINAL COLUMN DETAILS



Normal Load

Additional Load

**Uneven
Load**

Torsion Load

THE FORCES INVOLVED

- Think of your back as a lever
 - With the fulcrum in the center, it only takes ten pounds of pressure to lift a ten-pound object
 - Shifting the fulcrum to one side takes more force to lift the same object

THE FORCES INVOLVED

- Your waist act like the fulcrum on a 10:1 ratio
 - Lifting a ten-pound object puts 100 pounds of pressure on your lower back

THE FORCES INVOLVED

- Adding 105 pounds for an average human upper torso to lifting a ten-pound object, actually puts 1,150 pounds of pressure on the lower back
- If you were 25 pounds overweight, it would add an additional 250 pounds of pressure on your back every time you bend over

COMMON CAUSES OF BACK INJURIES

- Anytime you find yourself doing one of these things, you should think: *Danger! My back is at risk!*
 - To avoid heavy lifting, especially repetitive lifting, over a long period of time
 - Twisting at the waist while lifting or holding a heavy load, this frequently happens when using a shovel

COMMON CAUSES OF BACK INJURIES

- Reaching and lifting over your head, across a table or out the back of a truck
- Lifting or carrying objects with awkward shapes or sizes
- Working in awkward, uncomfortable positions

COMMON CAUSES OF BACK INJURIES

- Sitting or standing too long in one position, sitting can be very hard on the lower back
- It also is possible to injure your back slipping on wet floor or ice

HOW TO PREVENT BACK INJURIES

- Avoid lifting and bending whenever you can
- Place objects up off the floor
- Raise/lower shelves
- Use carts and dollies

HOW TO PREVENT BACK INJURIES

- Test the weight of an object before lifting by picking up a corner
- Get help if it's too heavy for you to lift it alone
- Use proper lifting procedures and follow lifting protocols

HOW TO PREVENT BACK INJURIES

- Follow these steps when lifting
 - Take a balanced stance, feet shoulder-width apart
 - Athletic position “ready”
 - Do not let knees go over toes, keep Lordosis in spine “curve”
 - Squat down to lift, get as close to the load as you can

HOW TO PREVENT BACK INJURIES

- Get a secure grip, hug the load
- Lift gradually using your legs, keeping the load close, with your head and chest up

HOW TO PREVENT BACK INJURIES

- Once standing, change directions by pointing your feet and then turning your whole body
 - Avoid turning at your waist
- To put the load down, use guidelines in reverse

THINGS YOU CAN DO TO HELP YOUR BACK

- Exercise to tone the muscles in your back, hips, thighs and abdomen
- Before beginning any exercise program, check with your doctor

EXERCISE

- Exercise regularly
- Warm up slowly – a brisk walk is a good way to warm up for exercise
- Inhale deeply before each repetition of an exercise and exhale when performing each repetition

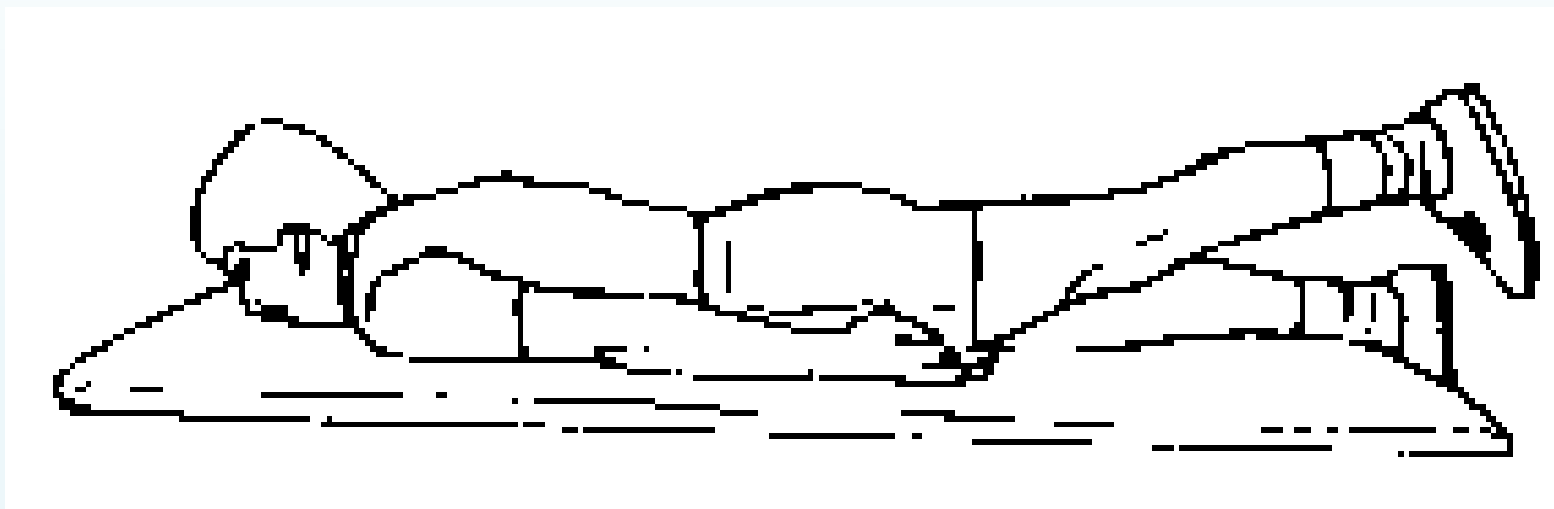
EXERCISES TO HELP YOUR BACK

- To strengthen leg muscles
- Wall slides: stand with your back against a wall, feet shoulder-width apart. Slide down into a crouch with knees bent to 90 degrees, count to five and slide back up the wall. Repeat five times.



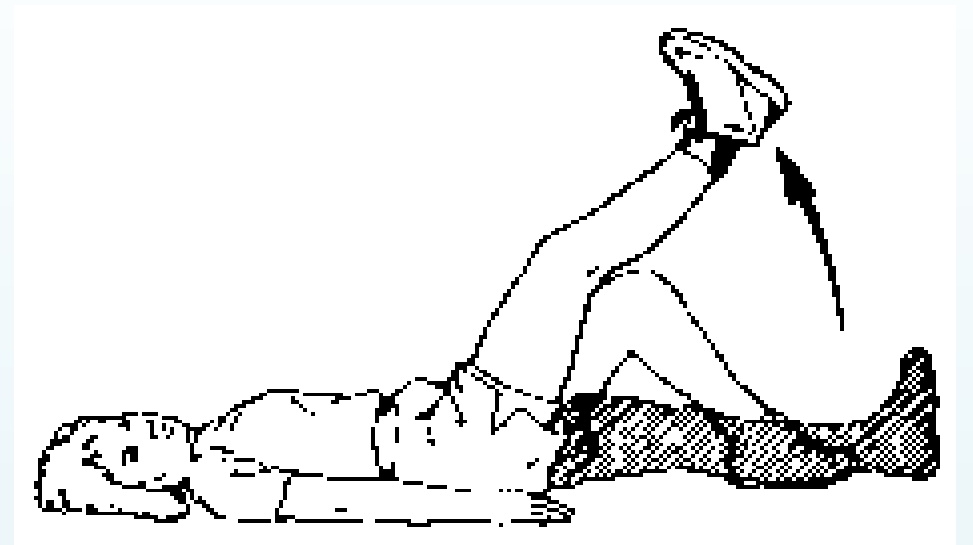
EXERCISES TO HELP YOUR BACK

- To strengthen back and hip muscles
- Leg raises on your stomach: tighten muscles in one leg and raise leg from floor. Hold for a count of ten and return leg to floor. Repeat five times with each leg.



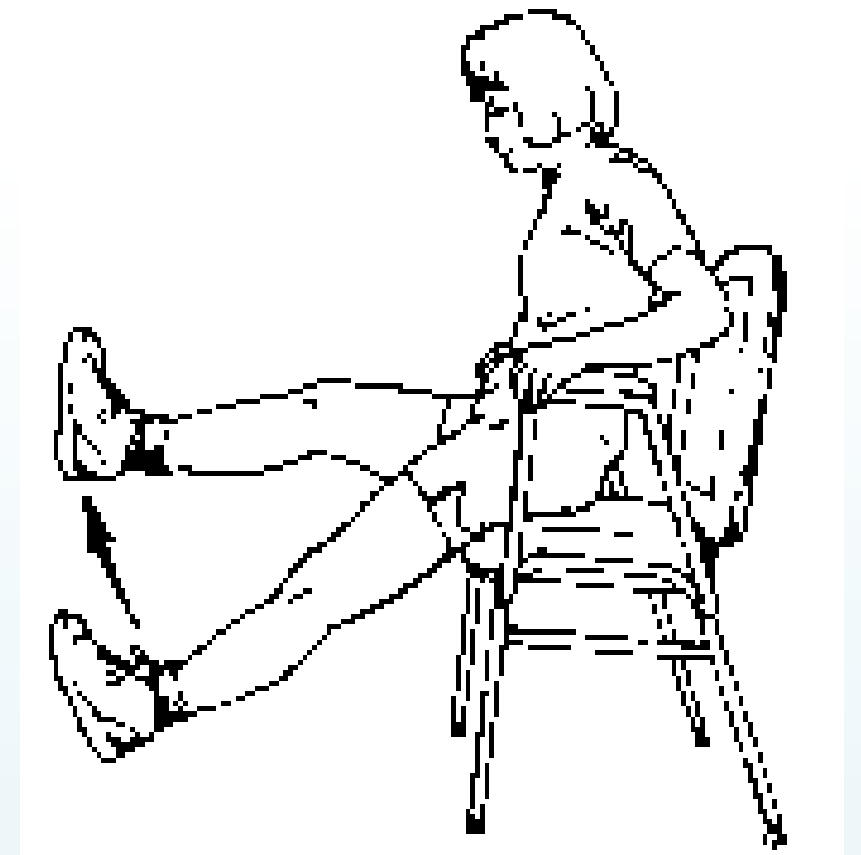
EXERCISES TO HELP YOUR BACK

- To strengthen back and hip muscles
- Leg raises on your back: lie on back, arms at your sides. Lift one leg off floor and hold for a count of ten. Repeat five times with each leg. If it is too difficult, keep one knee bent and the foot flat on the floor while raising the other leg.



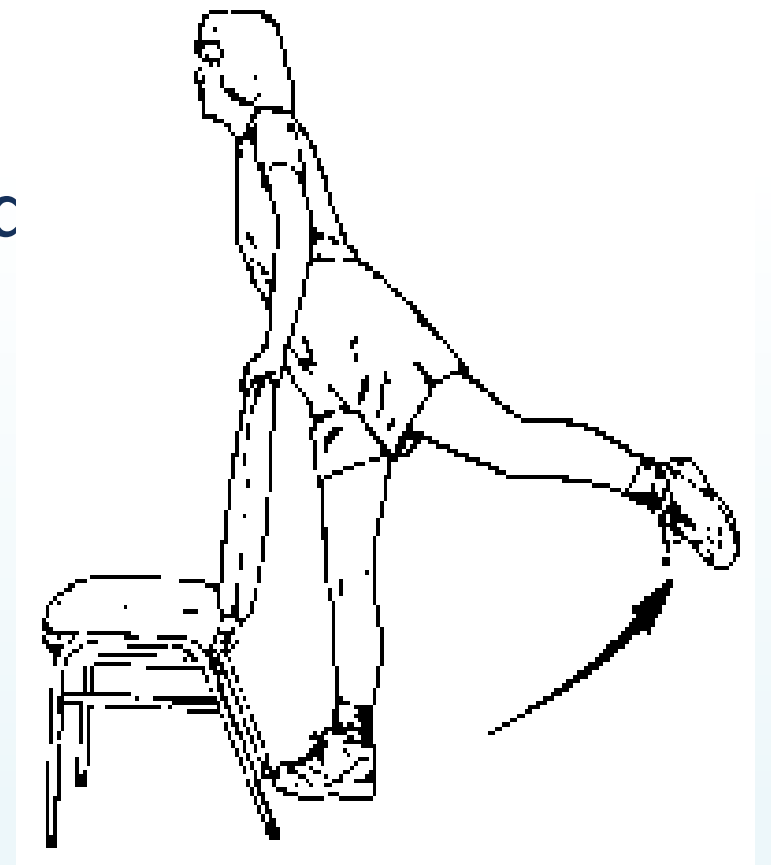
EXERCISES TO HELP YOUR BACK

- To strengthen back and hip muscles
- Seated leg raises: sit upright, legs straight and extended at an angle to the floor. Lift one leg waist high. Slowly return to floor. Repeat five times with each leg.



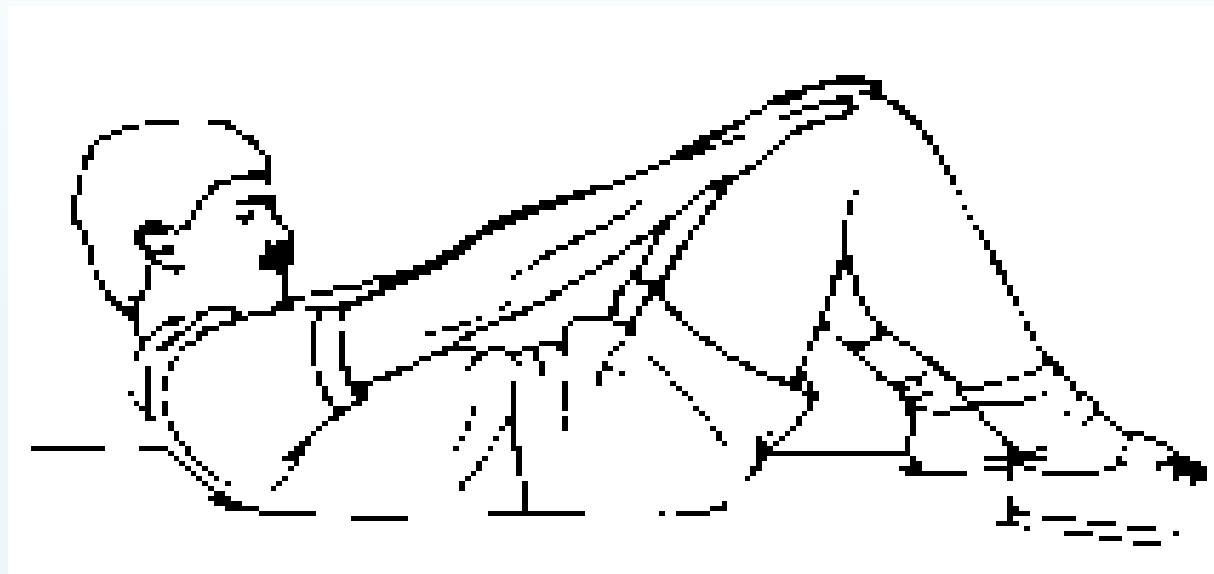
EXERCISES TO HELP YOUR BACK

- To strengthen hip and back muscles
- Back leg swing: stand behind chair, hands on chair. Lift one leg back and keeping the knee straight. Return slowly. Repeat five times with each leg.



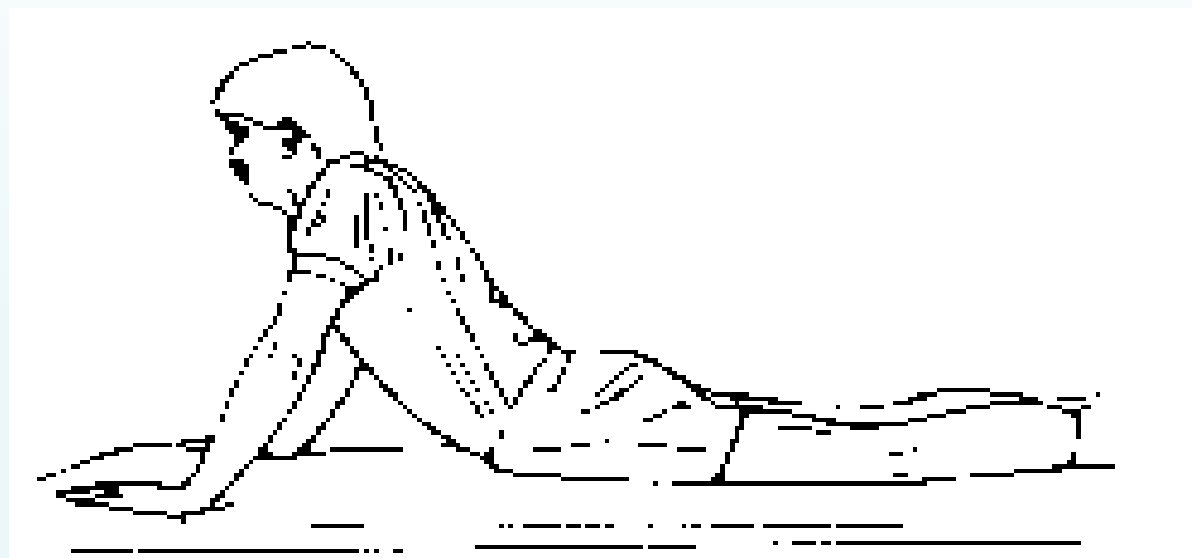
EXERCISES TO HELP YOUR BACK

- To strengthen stomach muscles
- Partial sit-up: Lie on back, knees bent and feet flat on floor. Slowly raise head and shoulders off floor and reach both hands toward your knees. Count to ten, repeat five times.



EXERCISES TO DECREASE STRAIN ON YOUR BACK

- Prone press ups
- Lie on stomach, hands under shoulders, elbows bent and push up. Raise top half of your body as high as possible. Keep hips and legs on floor, hold for one or two seconds. Repeat ten times, several times a day.



EXERCISES TO DECREASE STRAIN ON YOUR BACK

- Back extensions
 - Stand with feet apart. Place hands in small of back, keep knees straight. Bend backward at waist as far as possible, hold for one or two seconds. Repeat as needed.



TAKE CARE OF YOUR BACK – IT WILL TAKE CARE OF YOU

- Exercise
- Utilize legs when lifting, keep Lordosis in back, butt back
- Avoid heavy lifting alone (get help)
- Avoid twisting at the waist when lifting or carrying objects
- Always watch where you're going
- Remain aware of the potential for injury

QUESTIONS?