

Physical Therapy Department

Back Care



SYLLABUS

Subjects covered:

1. Anatomy & Function
2. Origins of Pain
3. Medical Terminology
4. Posture & Body Mechanics
5. Dealing with Acute Pain
6. Prevention of Back Pain

Purpose:

To instruct you in the care of your back so that you can avoid future episodes of low back pain.

I. Total Spine - Anatomy & Function

A. ANATOMY

1. 33 vertebrae, 24 separated by discs, 9 fused into one bone.
2. Has 3 normal curves that develop from birth to walking age.
3. The pelvis acts as a base for the spine. The head rests on top of the spine.

B. FUNCTION OF SPINE

1. Bear body weight.
2. Allow flexibility of the back - each segment bends at the point where it joins with its neighbor.
3. Protect the spinal cord (nerves) which transmits messages to and from the brain. Between each pair of vertebrae, there is an outlet for the nerves (see Diagram 2).
4. Provide attachment for muscles & ribs.

DIAGRAM 1

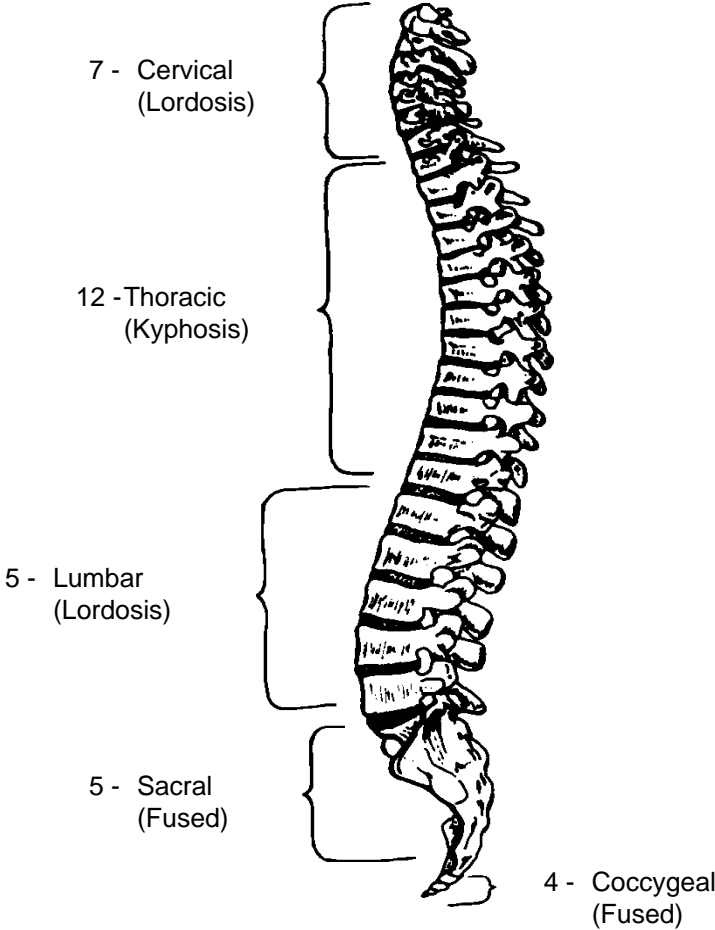
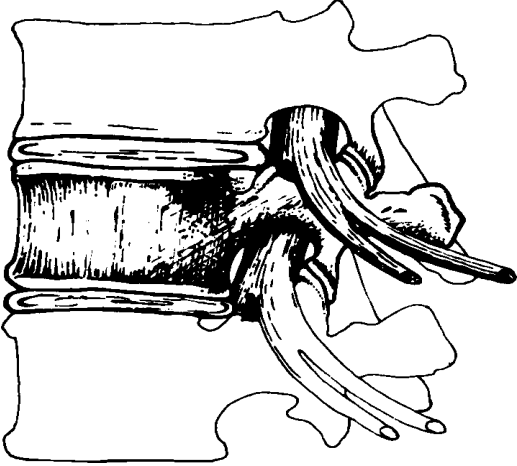


DIAGRAM 2



Enlarged Side View of Vertebrae

C. STRUCTURES OF THE SPINE (See Diagram 3)

1. Vertebrae
 - a. Body - supports weight.
 - b. Facet joint - guides direction of movement.
 - c. Canal - passageway for spinal cord.
 - d. Foramen - passageway for nerve root.
2. Ligament - a band of tissue that connects bone to bone.
 - a. Stabilize column.
 - b. Reinforce disc.
 - c. Limits motion.
3. Disc - (See Diagrams 3 & 4) a spacer between two vertebrae bodies.
 - a. Anatomy
 - (1) Annulus fibrosis - a semi-elastic container
 - (2) Nucleus pulposus - a semi-gelatinous fluid
 - b. Function
 - (1) Shock absorber
 - (2) Allows motion of the spine
4. Muscle - tissue which produces movement of the body by contracting.
5. Tendon - a fibrous band of tissue which attaches muscle to bone.

DIAGRAM 3
SIDE VIEW

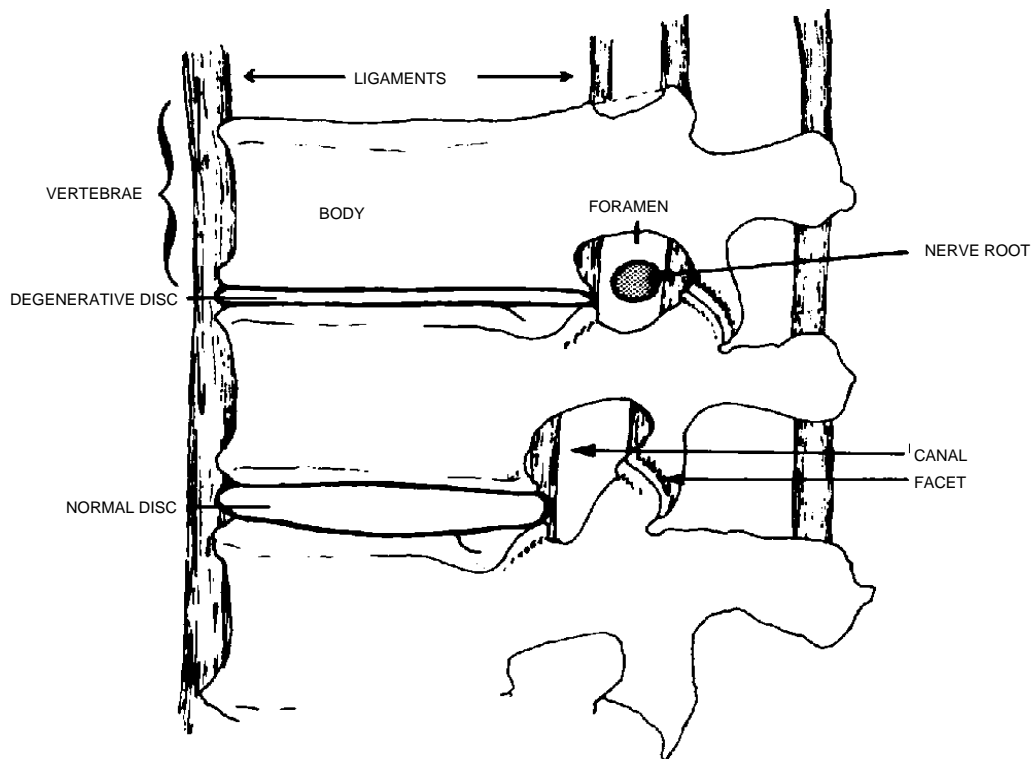
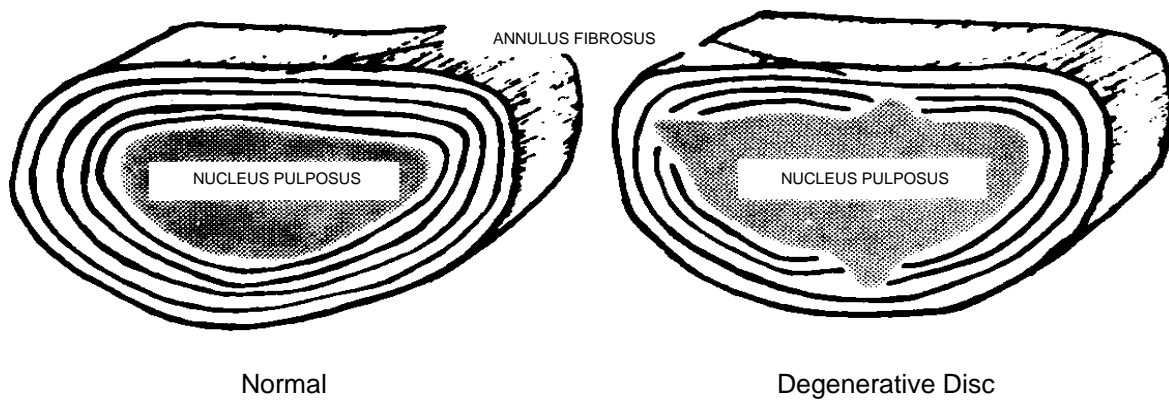


DIAGRAM 4
DISC



II. Possible Origins of Pain

- A. DISC
- B. NERVE
- C. FACET JOINT
- D. LIGAMENTS
- E. MUSCLE
- F. BONE

III. Medical Terminology

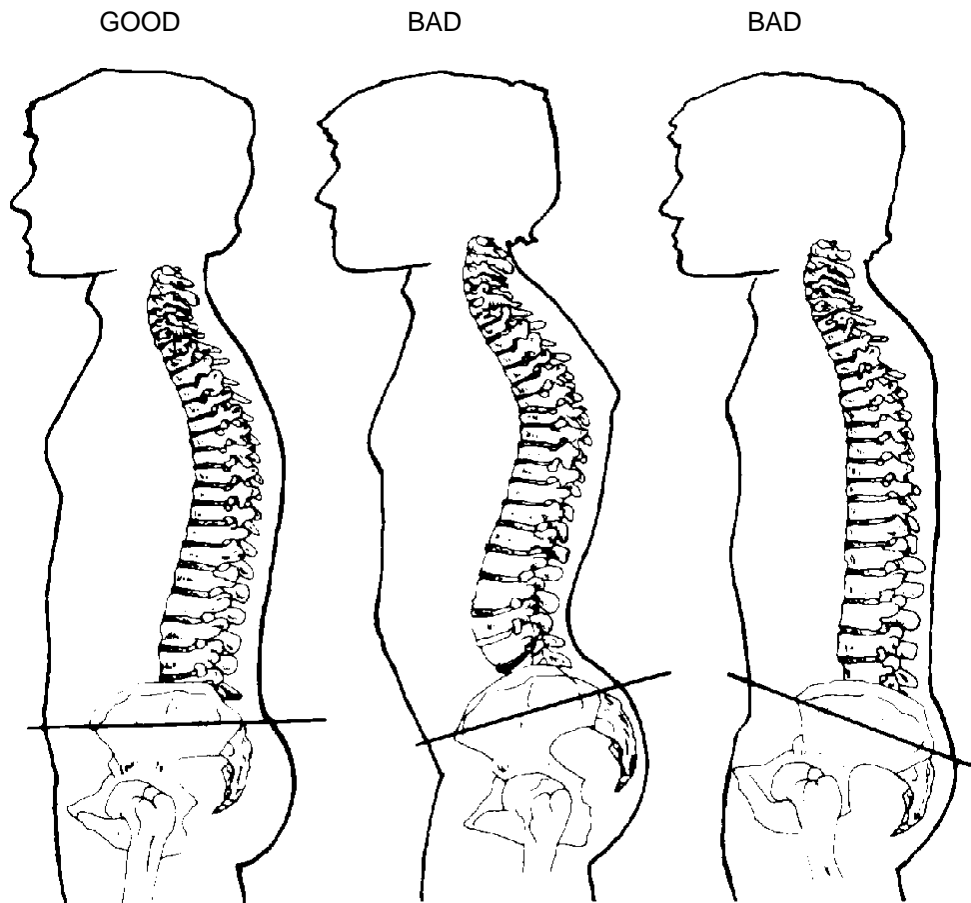
- A. **Herniated disc** - "slipped disc," "ruptured disc." Release of the nuclear material from the confinement of the annulus fibrosus causing irritation of surrounding structures.
- B. **Osteoarthritis** - Degenerative changes of any joint. Can affect bones. Can cause deterioration of cartilage.
- C. **Sciatica** - Irritation of the sciatic nerve causing pain down the back of the thigh and leg. Also used to describe any radiating leg pain.
- D. **Myelogram** - X-ray inspection of the spinal canal by use of a radio-opaque medium.
- E. **Laminectomy** - A surgical procedure.
- F. **Fusion** - The joining of two or more vertebrae.

- G. **Lordosis** - A forward curvature of the spine as viewed from the side. A hollow in your back.
- H. **Kyphosis** - A backward curvature of the spine as viewed from the side.
- I. **Muscle spasm** - An involuntary contraction of a muscle frequently accompanied by pain and interference of movement.
- J. **Scoliosis** - A side to side deviation in the normally straight alignment of the spine.

IV. Posture

Whatever the cause of low back pain, part of its treatment is the correction of faulty posture. Good posture is not simply a matter of "standing tall." It refers to the correct use of the body at all times. In order for the body to function efficiently, muscles, joints, bones and/or ligaments must not be strained. If the segments are well balanced, the muscles don't have to work to maintain balance. The body feels less fatigued and can work more effectively.

**THE POSITION OF THE PELVIS CONTROLS THE
SHAPE OF THE SPINAL COLUMN**



A. Slight curves are normal. If the pelvis changes position, the curves change shape. When the shape of the curve changes:

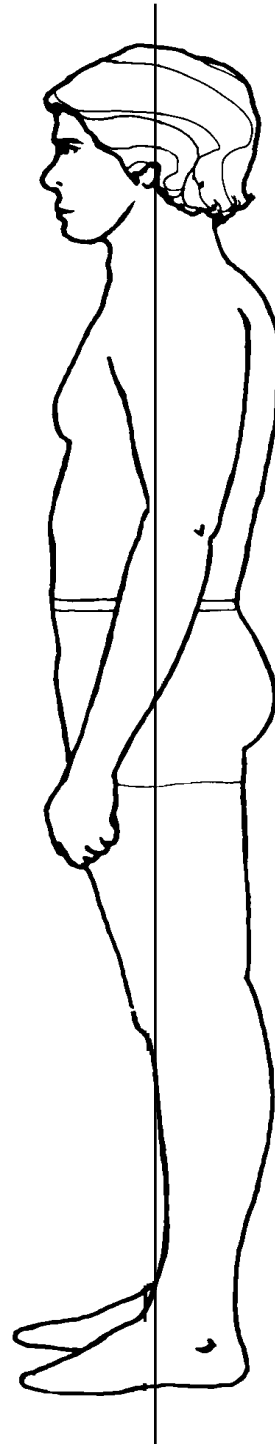
1. The size of the nerve outlet can change and the nerve may be pinched.
2. The shape of the disc can change and push on the nerves or ligaments.
3. The strength of the column is weakened, placing a greater load on the discs.
4. The ligaments and muscles can be put on a stretch.

B. GOOD STANDING POSTURE

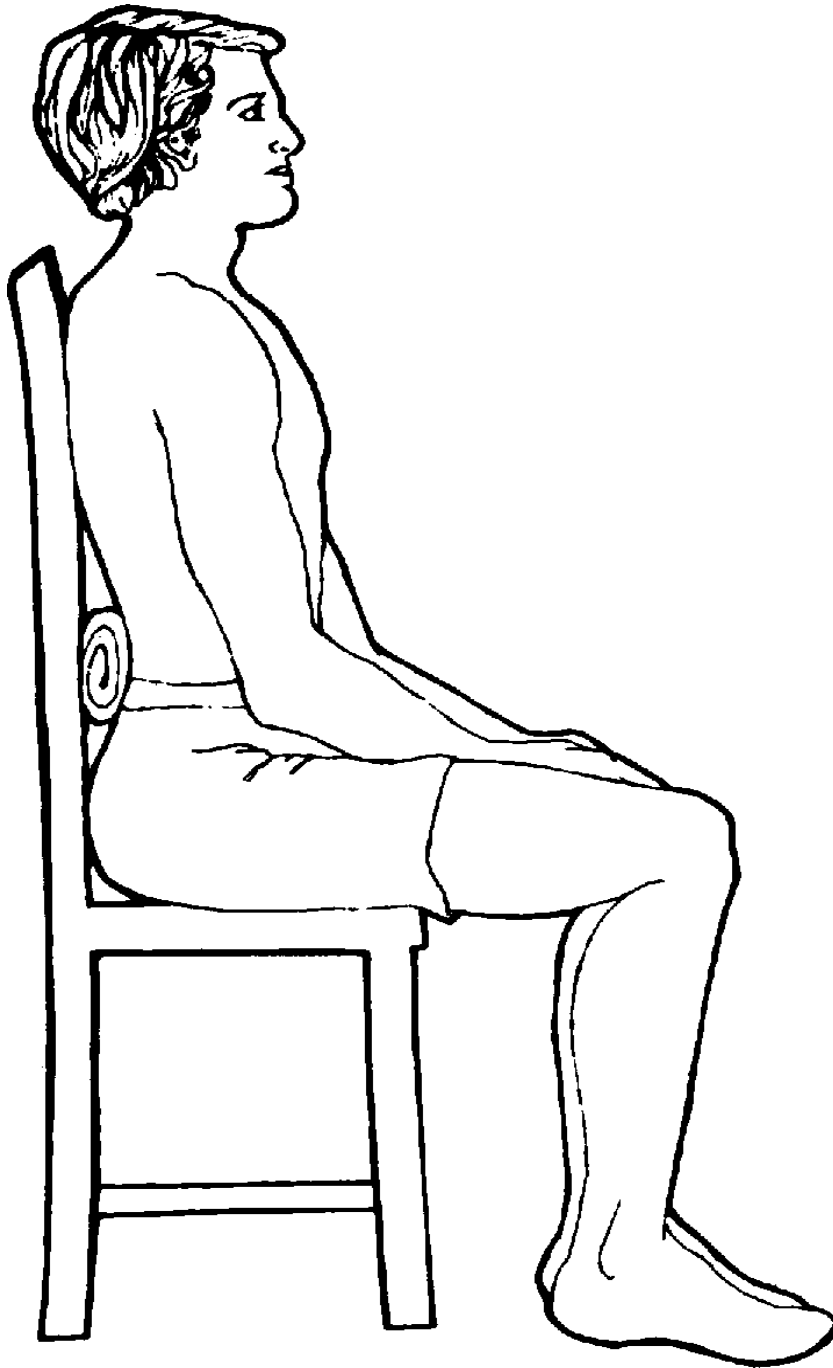
1. Increases efficiency of body
2. Conserves body energy
3. Protects the back
4. Improves appearance

C. MAINTAINING PROPER ALIGNMENT

1. Head - Over shoulders, chin tucked, eyes level
2. Shoulders - Square not rounded
3. Pelvis - Hold in **mid-position** with slight hollow in the low back.
4. Knees - Hold slightly bent not locked straight
5. Feet - A few inches apart with the weight evenly distributed



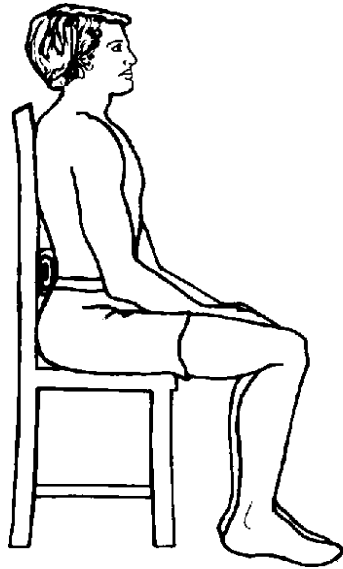
C. GOOD SITTING POSTURE



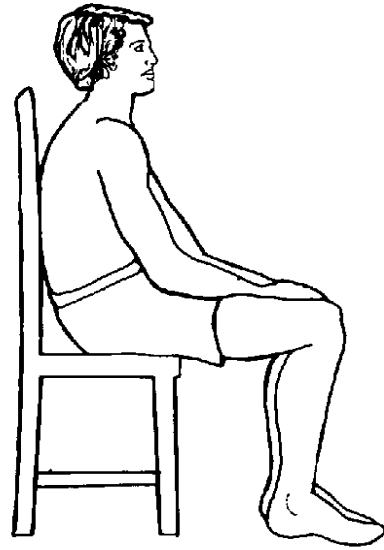
Maintain the **normal** hollow in your low back - you can do this with your own muscles or by using a small roll across the belt line. If you have a reclining chair, tipping it back 20-25° while maintaining the hollow in your back, is also a good sitting posture. Avoid sitting with the legs straight in front of you. Sit with your shoulders square and your head over your shoulders.

D. SITTING - Maintain the normal curve. Avoid prolonged sitting.

GOOD

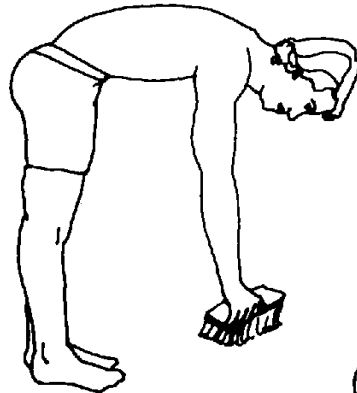


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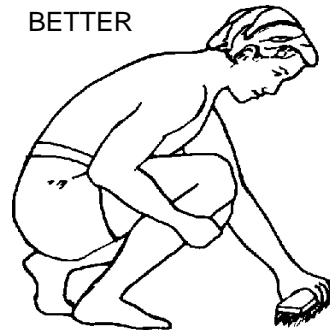


E. FLOOR/GROUND LEVEL ACTIVITIES

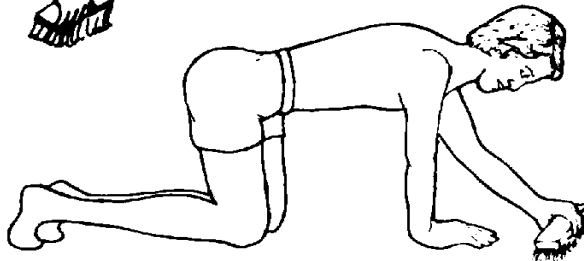
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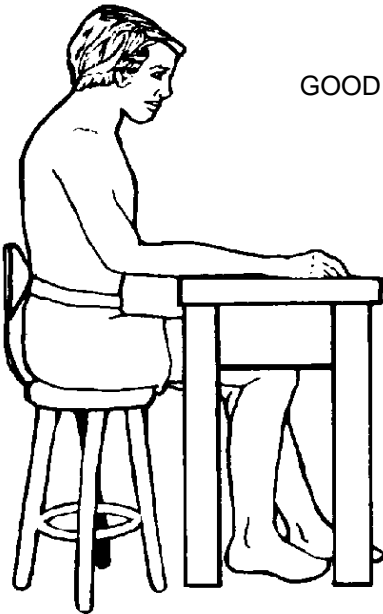
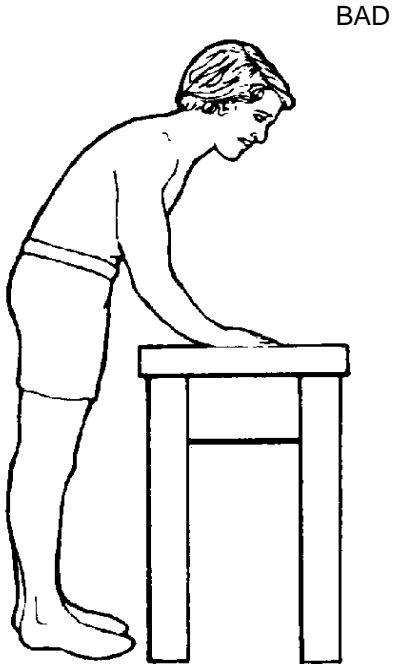
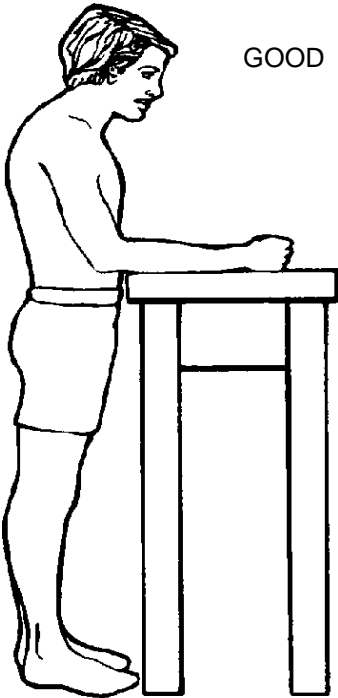
BETTER



BEST

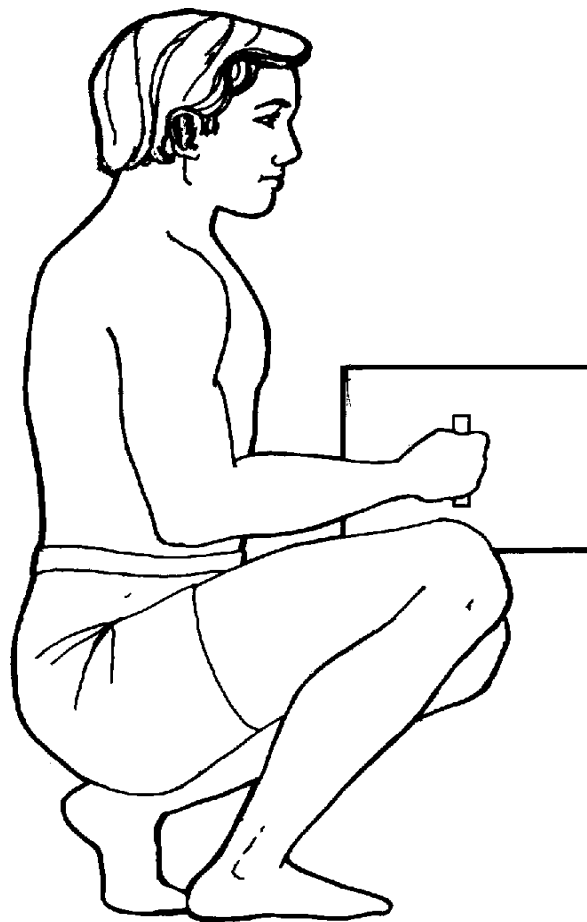


F. STANDING ACTIVITIES - Adjust the level of your work if it's too low. If you can't, sit on a high stool.



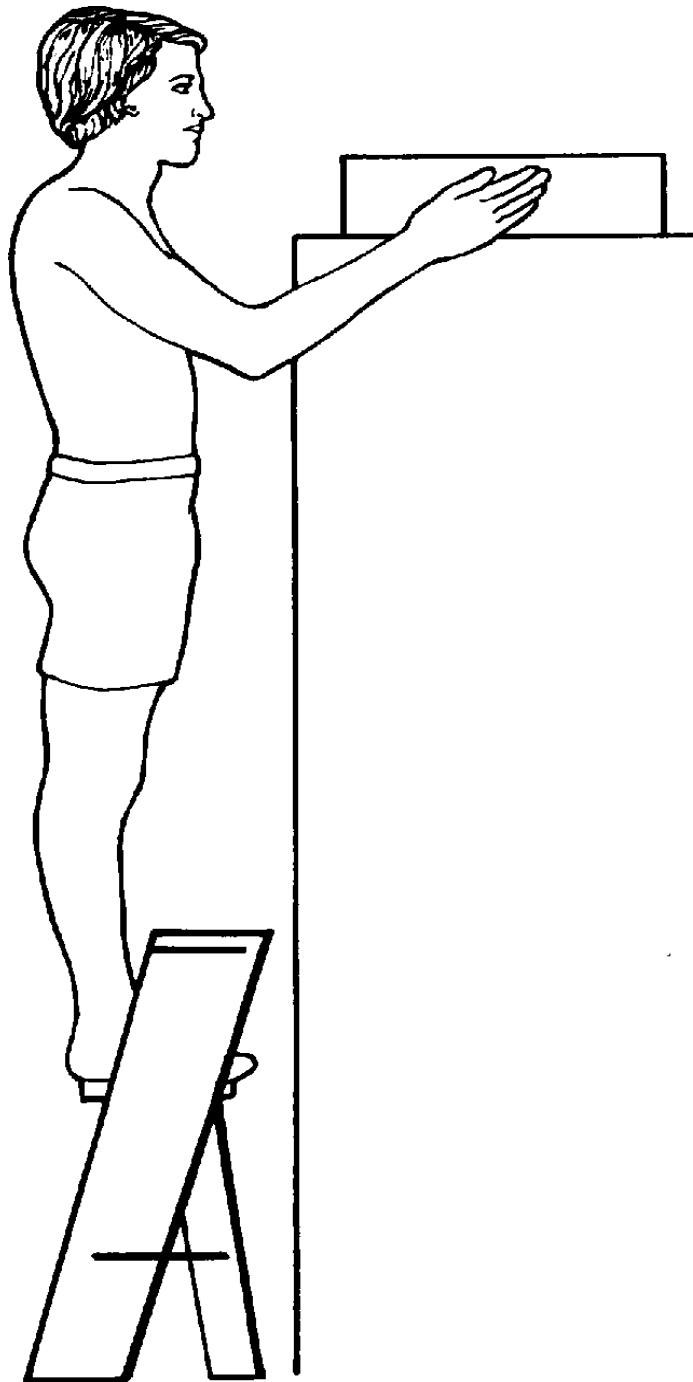
G. LIFTING

1. Lift with your legs, not your back. Use a wide base of support.
2. Keep the hollow in your low back as much as possible.
3. Your feet should face the object as you pick it up.
4. Your feet should face the object as you set it down.
5. Avoid twisting.
6. Plan the lift before you start.
7. Keep the load close to your body.
8. If the load is too heavy or awkward - **get help!**



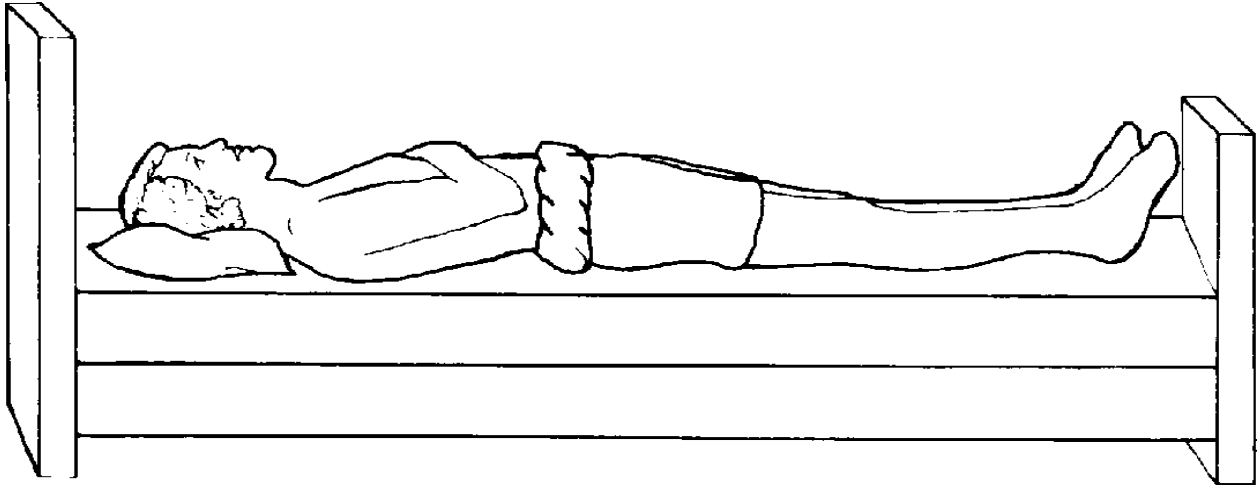
H. REACHING

1. Avoid reaching overhead, use an appropriate stool or step ladder.
2. Never over-reach to pick up a heavy object.

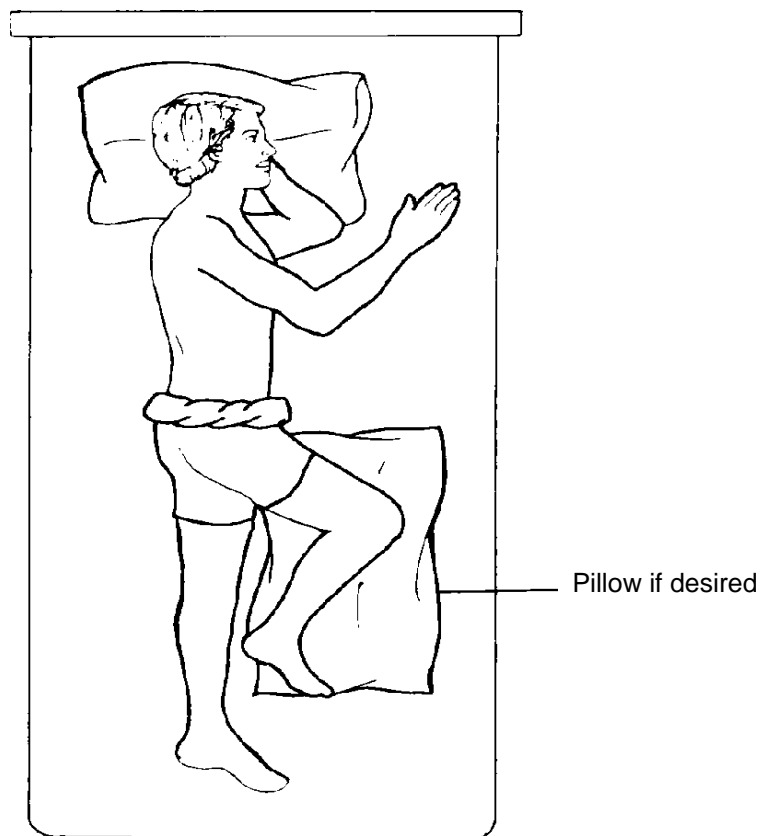


I. SLEEPING - Find a comfortable position. Some suggestions:

1. On your back with a roll under the low back or towel pinned around waist.



2. On your side with top leg bent and the bottom leg straight.



V. Dealing with Pain in Acute Stage

- A. Don't do any unnecessary sitting!
- B. Lie down in a comfortable position to read, watch TV, etc. (Use a firm surface - avoid the sofa.)
- C. Don't do anything that increases the pain.
- D. Walking is good for the low back. Walk short distances as tolerated.
- E. Use ice packs to reduce the pain & muscle spasm for the first 2 days. (May try heat after that.)
- F. If none of the above gives relief and pain persists, contact your physician.

VI. Prevention of Pain

- A. Be active, "keep in shape" - swimming, walking, bicycling.
- B. The smaller the waistline, the smaller the load on the low back.
- C. Avoid unnecessary lifting. Lift with the legs, keep the hollow in the low back. Don't over-reach and lift at the same time.
- D. When prolonged sitting is necessary, in addition to using a lumbar support, stand and walk erect for 2-3 minutes every half hour.
- E. When required to work in a "bent" position, restore the hollow in your back **before** pain commences.
- F. Continue in activities you enjoy, but be "**posture conscious.**"



The information presented here is not intended to diagnose health problems or to take the place of professional medical care. If you have persistent health problems or if you have further questions, please consult your health care provider.