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Family and Consumer Sciences

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Low Back Disorders: Injury Prevention and Risk Reduction

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Introduction

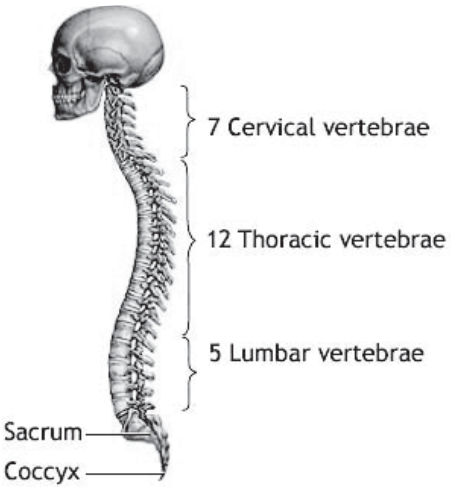
Low back disorders (LBD) are often the result of heavy physical work, lifting and forceful movements, bending and twisting, whole-body vibration and static work postures. These are common workplace practices within the agricultural field. With one in six jobs in Arkansas being in agriculture, it makes the agricultural industry a high risk for developing LBD.

Characteristics of LBD include back pain or discomfort – both acute and chronic – that can limit the normal use of the back. Acute is a short-term disorder that can last from a few days to a few weeks. Chronic is typically a disorder that lasts for three months or longer.

This publication will focus on acute disorders, all of which are common to the agricultural workplace setting. In addition to workplace practices, other factors can increase a person's risk for developing LBD. These factors include limited range of motion (ROM), muscular endurance, age, gender and waist circumference. However, evidence has shown the risk for developing LBD can decrease through stabilizing approaches such as modified work practices and exercises that target the trunk and core.

What Can Cause LBD?

The vertebral column is very complex. It consists of 24 movable vertebrae and nine fused, non-movable vertebrae. These vertebrae are divided into regions.



Seven vertebrae make up the cervical region or the neck, twelve make up the thoracic region or the area around the ribs and five make up the lumbar region or the lower back. The nine fused vertebrae make up the sacrum (pelvic girdle) and the coccyx (tail bone).

Each region has various functions, and the bones that make up the regions vary in size.

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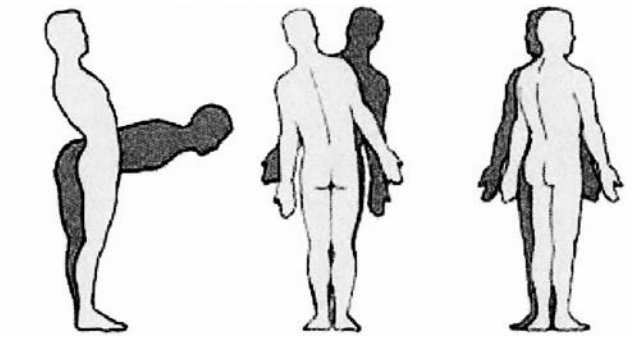
Bones of the cervical region are smaller than those of the lumbar region because the lumbar region or the lower back supports more weight than the neck. The majority of spinal movement occurs in these two regions.

The lumbar region accounts for most trunk movement and is involved in bending (flexion and extension) and twisting (rotation to the left and right). These types of movements are not unlimited, though. While the lumbar region can flex up to 80 degrees, extend between 20 and 30 degrees and rotate up to 45 degrees, each person's range of motion (ROM) is different, depending on his or her flexibility and physical condition. When excessive stress is put on this region, injury or discomfort can occur. Excessive stress can occur from obesity or weight gain, poor physical condition, poor posture, poor sleeping positions and inappropriate work practices, such as when a person lifts something that is too heavy or overstretches in a certain direction.



Extension/Flexion Left/Right Side Bending Left/Right Rotation

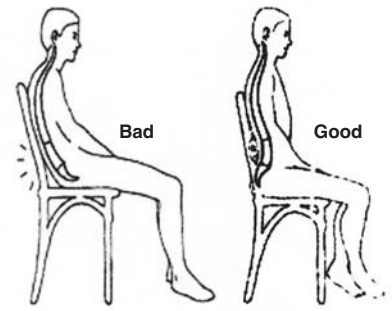
Another factor that can increase the risk of developing LBD is tight hamstring muscles. The hamstring muscles are the large muscles on the back of the thighs or the back part of the upper leg just below the buttocks. When these muscles are tight or have limited flexibility, they can limit the ROM of the pelvis. This limited ROM is transferred upward into the lower back.

Many LBDs are preventable. To reduce the risk of developing LBD, exercise regularly (at least 150 minutes a week is recommended) and focus on exercises that stretch and strengthen the muscles in the trunk and core (back, abdomen, buttocks and hamstrings). Maintain a correct posture and modify workplace practices to reduce excessive vibrations, repetitive motions and unsafe heavy lifting.

Tips to Reduce the Risk of Developing LBD

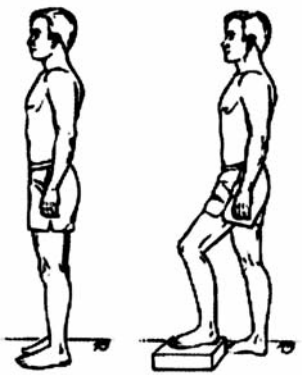
Sitting

- Maintain a proper posture when sitting.



- Don't slouch, and keep your shoulders back.
- Sit in a chair with good lumbar support and at the appropriate height for the task being done. If the chair does not have lumbar support, a rolled-up towel or small pillow can be substituted.
- Switch tasks often. Periodically get up from a seated position and walk around to stretch muscles and relieve tension.

Standing

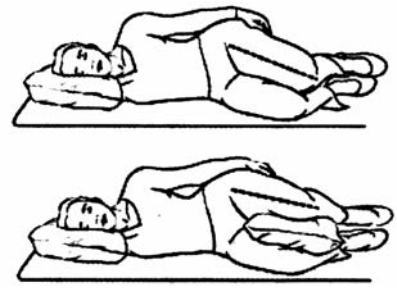


- Maintain a proper posture when standing.
- Keep your weight balanced evenly on both feet, and keep a slight bend in the knees or alternate placing one foot on a slightly elevated surface. This will help reduce the amount of curvature and stress placed on the back.
- Stand closer to the work area to help keep the back straight.
- When standing for prolonged periods, bend, stretch and walk to reduce stiffness.

- Try standing on a rubber mat. Rubber matting can reduce the amount of friction transferred from the hard standing surface to the lower back.
- Wear comfortable, low-heeled shoes.

Sleeping

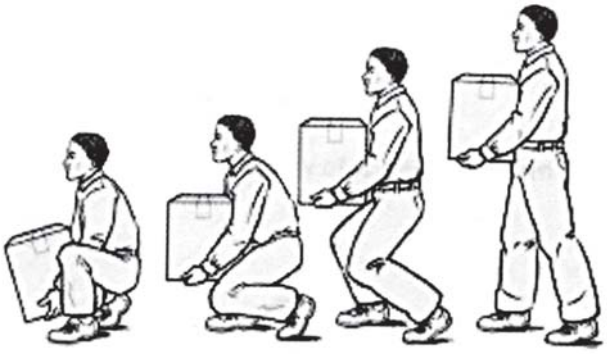
- Sleep on your side with your knees bent.



- Sleep on a firmer surface.
- Place a pillow between the knees to help align the back.
- Avoid sleeping on your stomach.

Lifting

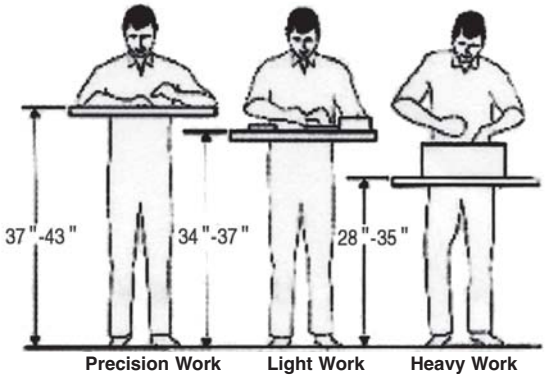
- Do not lift objects that are too heavy for you. Ask for help.
- Keep the object close to your body.
- Do not twist when lifting.
- Keep your back straight.
- Lift with your legs rather than your back.



- Keep lifts between hand and shoulder level. Avoid lifting over the head.
- Use a dolly or a cart to move objects more than a few feet.

Other Tips

- Have work stations at the proper height to avoid excessive stooping or bending.



Different Tasks Require Different Work Surface Heights

- Avoid excessive or repetitive reaching, bending, squatting and twisting.
- Position items within 17 inches to reduce reaching and twisting.
- Use long-handled tools to reduce bending and squatting.
- Upgrade equipment.
- Anti-vibration seats can reduce whole body vibrations or shaking and jolting.
- Swivel seats can reduce twisting.
- Wide-angle mirrors can reduce twisting.
- Adding an extra step can reduce low back strain.

Exercise

In addition to the hamstring and buttocks muscles, there are three other muscle types that help the trunk region function: the extensor muscles, the flexor muscles and the oblique muscles.

The extensor muscles are attached to the back of the spine and assist in standing and lifting. These muscles also work in conjunction with the buttocks and hamstrings.

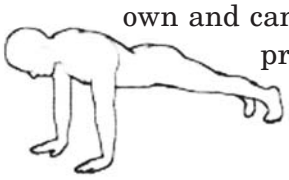
The flexor muscles are attached to the front part of the spine or the abdomen. These assist in flexing, bending forward and arching the lower back.

The oblique muscles are attached to the sides of the spine and assist in rotation and proper posture. Cardiovascular exercises such

as swimming and walking can help to improve muscular strength, coordination and balance. These areas can also be improved through stabilizing, strengthening and stretching exercises.

Stabilizing exercises help to prevent falling, which is a major cause of broken hips and other injuries that often lead to disability and loss of independence. An example of a stabilizing exercise is the "chair pose."

Strengthening exercises help to build stronger muscles. Increasing your strength can allow you to perform daily activities on your own and can help to prevent the progression of osteoporosis. An example of a strengthening exercise is the "plank."



Stretching exercises stretch the muscles and tissues that hold your bones together. These types of exercises can increase your flexibility and range of motion and allow for daily activities such as reaching overhead and looking over your shoulder. An example of a stretching exercise is the "trunk rotation."

For more information on these particular exercises, visit Fit in 10 at www.uaex.uada.edu.

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Yoga Cards, www.yogacards.com

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