



# TDCJ Risk Management's Training Circular

Volume 16 Issue 1

Risk Management Issues

January 2016



## January



### Proper Lifting and Injury Prevention

The back supports the weight of the entire upper body. When an object is lifted or heavy loads are moved, the back supports even more weight. If the body's natural limits are exceeded, the back cannot support both the body and the extra load. The excess, unsupported pressure is transferred to the lower back, where injury is imminent. By using arm and leg muscles and exercising proper lifting techniques, loads can be moved safely while protecting the back from injury.

Remember the proper lifting techniques should be used to avoid injury when lifting heavy objects. Use proper lifting techniques and aides to safely lift an object and request assistance if needed.



not always mean a light load. Clear a path to your destination before lifting and carrying the object.

#### Verify load is packed correctly.

- Make sure the weight is balanced and packed so it will not move around. Loose pieces inside a box can cause accidents if the box becomes unbalanced.

#### Verify grip.

- Be sure a tight grip is on the object before lifting. Handles applied to the object may help lift it. Use slow and smooth movements. Hurred, jerky movements can strain your back muscles.

#### Verify load is within easy reach.

- Injury can result if your back is arched while lifting a load over the head. Use a ladder to reach high

areas. When climbing with a load, maintain "three-point" contact. This means two hands and a foot or both feet and a hand must be in contact with the ladder or stairs at all times.

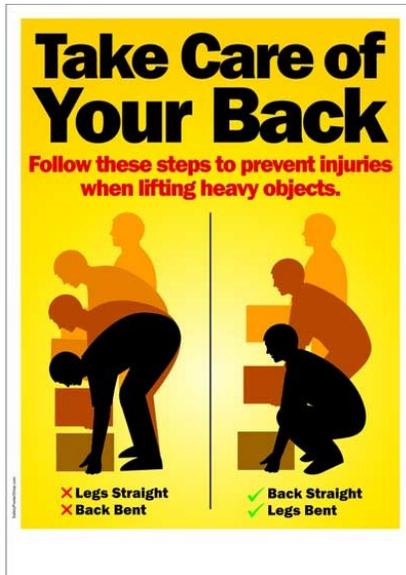
#### The Diagonal Lift

- Feet are apart, with one foot slightly ahead of the other. This gives a wide base of support, provides more stability, energy and power.
- Bend knees and squat down; keep back arched and head up while lifting. This position allows more power to come from the larger muscles of the legs and keeps the weight off the back.
- When lifting and carrying, keep objects close to the body.

#### Proper Lifting Check the weight of the object before attempting to lift it.

- Test every load before lifting by pushing the object lightly with hands or feet to see how easily it moves. This will indicate about how heavy it is. A small size does





### Body Mechanics

- Body mechanics is the proper way to move and position the body for different activities in order to prevent injuries. It is important to remember that our bodies do not stop functioning when we go home from work. We need to follow the same guidelines both at work and home .
- The natural position of the back is an "S" curve. This is referred to as the neutral position. To keep the neutral position and for good posture, we need to learn to maintain a straight line, from midline of the ears - to the shoulders - to midline of the hips - to midline of the knee- to midline of the ankle. This means standing tall, pulling in our stomach, and tightening our buttocks. Think of it as a plumb line from the ears to the knees. This will keep our back in a natural "S" curve .
- Many of us spend a large part of our day sitting. Sitting increases weight on the spine. Slouching can place an additional pressure on the back. Some possible solutions for proper sitting might include: Have

a chair with maximum adjustability; maintain neutral position; move frequently (take micro breaks); and have adjustable work surfaces.

- If your job includes long periods of standing, you should place one foot on a footrest. This technique raises the front of the pelvis and reduces the possibility of a sway-back condition.
- Alternate from one foot to the other frequently. Adjust your work surface height to keep from bending over while working. If your work area is a cubicle, you can adjust the desk height. If you have a regular desk, and cannot find a way to correct the height, adjust your chair to fit the desk and use a foot-rest.
- When arranging your work area or the company storage room, consider each object carefully in order to avoid reaching overhead or bending over. Think about how often the object is used as well as the weight of the object. The best lifting zone is between the shoulders and waist. Place heavy and frequently used objects near waist height to reduce bending and twisting to reach the object. Place lighter objects higher or lower. Use dollies or carts to move heavy objects rather than carrying them.
- Pushing an object is much better for your back than pulling it. If you push, you can see over your load



and use your legs, not your back. Keep the object in front of you and stay as close to the object as possible, as this gives you more control and direction.



### Strain or Sprain?

- Strain and sprain both mean something has been stretched beyond its limits. A strain refers to a muscle. When a muscle is strained, it has been forced to exceed its ability to work.
- Regular exercise can strengthen muscles and allow them to work harder longer, which is important considering muscles are the spine's workhorses.
- A sprain can occur in ligaments (fibrous bands connecting bones together) or in tendons (bands of tissue attaching muscles to bones). Sprains are sudden, sharp, and persistent pain at the injury site, followed by swelling.

### Common Lifting Mistakes

- When lifting, you should not bend forward at the waist with your legs straight. When you bend forward at the waist with your legs straight, it requires the use of the muscles in your lower back, and the weight of the object being lifted will include the weight of your upper body.

- Bending and twisting when lifting forces the spine into a position of weakness and removes the natural "S" curve of strength from the lifting process.
- The back is like a lever system. The distance between the load and the fulcrum (point of support) can be considered the distance between the body and the object being lifted.
- Most do not effectively plan the lift. You need to check the path of travel to be sure it is clear. Size up the load and if it is too heavy or bulky for you to lift alone, ask for help.

### Prevention

You may be able to avoid back pain or prevent its recurrence by improving your physical condition and learning and practicing proper body mechanics.

To keep your back healthy and strong:

- **Exercise.** Regular low-impact aerobic activities — those that do not strain or jolt your back — can increase strength and endurance in your back and allow your muscles to function better. Walking and swimming are good choices. Talk with your doctor about which activities are best for you.
- **Build muscle strength and flexibility.** Abdominal and back muscle exercises (core-strengthening exercises) help condition these muscles so that they work together like a natural corset for your back. Flexibility in your hips and upper legs aligns your pelvic bones to improve how your back feels. Your doctor or physical therapist can tell which exercises are right for you.
- **Maintain a healthy weight.** Being

overweight strains back muscles. If you're overweight, trimming down can prevent back pain.

### Back Belts

As of this writing, scientific evidence to support the use of back belts in the prevention of back injuries is inconclusive. After a review of available scientific literature, National Institute for Occupational Safety and Health (NIOSH) has concluded that, because of the limitations of the studies that have analyzed workplace use of back belts, the results cannot be used to either support or refute the effectiveness of back belts in injury reduction. NIOSH therefore, does not recommend the use of back belts to prevent injuries among workers who have never been injured. Instead, NIOSH suggests that employers focus on the design of the work environment and the work task in reducing the hazards of lifting. This recommendation by NIOSH does not pertain to the individual use of a back belt that has been prescribed by a licensed medical provider.



### References

- Texas Department of Criminal Justice Environmental Advisory EA-05.04 Back Injury Prevention
- Mayo clinic: Prevention. (2015). Retrieved from <http://www.mayoclinic.org/diseases-conditions/back-pain/basics/prevention/CON-20020797>

Training Circular  
TDCJ Risk Management Department  
Volume 16 Issue 1

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The Training Circular, a publication of the Texas Department of Criminal Justice Risk Management Department, is published monthly in an effort to promote and enhance risk management awareness on issues relating to TDCJ employees. Design and layout of the Training Circular is performed by Thomas Warren, Risk Management. Comments, suggestions and safety related items are welcome. Send suggestions to:

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