
LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES

PURPOSE: This document provides guidance to help staff members prevent injuries while performing lifting operations.

References: U.S. Bureau of Labor Statistics

U.S. Army Center for Health Promotion and Preventative Medicine - Ergonomics Program

San Francisco Department of Public Health - Occupational Safety & Health - Back Safety

Background-Potential Injuries:

Almost three million injuries are sustained in the workplace each year. Back injuries, in particular, account for 1 in 5 of these injuries and is the single leading cause of disability worldwide. The majority of injuries caused by improper lifting techniques are muscle strains or ligament sprains in the lower back. A muscle strain occurs when weak muscles have been overstretched or torn. A ligament sprain, on the other hand, occurs when the fibrous tissue between bones has been stretched or torn. While seemingly simple injuries, both strains and sprains can cause severe lower back pain. Poor lifting technique can also cause vertebral discs to shift out of alignment. When this happens, the discs can come in contact with root nerves or the spinal cord causing tremendous pain. Additionally, a person may suffer from an injured disc which will cause lower back pain and potentially radiate pain to the buttock or thigh. When discs have been injured, they stiffen.

Day to Day Basics:

Back safety starts with keeping a person's back healthy. Day to day measures include exercising and performing stretches, keeping a person's back in its natural S-curve, maintaining a healthy weight, and reducing stress.

Preparation and Planning:

These are critical aspects of ergonomic lifting always consider the following key points.

1. Evaluate the lifting task for safety and ensure that there is adequate time for the project.
2. Know how much a person can safely lift and ensure the load doesn't exceed it.
3. Assess whether the object is too large or awkward to lift and carry safely. A person can estimate the reasonable weight of loads to be lifted by gently pushing or tilting the load before making the lift.
4. Breakdown heavy, larger loads into smaller, lighter ones whenever possible.

LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES

5. Is it a two-person job? Only one person should give instructions. Decide the route to take before carrying the object and discuss all possible problems prior to moving the object. Work as a team!
6. Is a hand truck, dolly, pushcart, or another tool needed?
7. Will a person be able to get a good grip? Are gloves needed?
8. Make sure to wear proper footwear to prevent injury from a dropped load. Proper footwear will also keep you from slipping while moving objects.
9. Know where the object is going to be placed ahead of time. Ensure the path is unobstructed, the floor is dry, and the distance isn't too great for safety.
10. Is the load too heavy, ungainly or does it obstruct vision?
11. Will it need to be carried far or lifted overhead?
12. Inspect the object for sharp edges, nails, splinters, and other problems that may cause injury prior to or during the lift.
13. Find a safe alternative if proper conditions cannot be met.

Before A Lift- Once there is a plan for lifting ergonomics, a person should stretch and warm up their muscles before lifting. Loosen up the back with lower-back rotations. Stretch the hamstrings and get the blood flowing. These measures will reduce the potential risk of injury.

When lifting, a person should never bend forward to lift a heavy object. Instead, a person should squat, secure the load, and stand by straightening their legs while keeping their back straight or slightly arched.

Basic Lift (Diagonal Lift) - This lift is the most common method of good lifting technique. Use the basic lift for objects small enough to straddle where there is enough room to use a wide stance. To confirm the lift is being done correctly, a person's head will lift up first followed by a straight back. If a person's hips come up first and the person must bend their back as they straighten up, the lift is being done incorrectly.

1. Keep a wide base of support. Feet should be shoulder-width apart with one foot slightly ahead of the other (karate stance).
2. Squat down, bending at the hips and knees only. If needed, put one knee to the floor and the other knee in front bent at a right angle (half kneeling).
3. Keep good posture. Look straight ahead, keep the back straight, chest out, and shoulders back. This helps keep the upper back straight while having a slight arch in the lower back.

LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES

4. Slowly lift by straightening the hips and knees (not the back). Keep the back straight, and don't twist while lifting.
5. Hold the load as close to the body as possible at the level of the belly button.
6. Use the feet to change direction taking small steps.
7. Lead with the hips as direction changes. Keep the shoulders in line with the hips as the body moves.
8. Set down the load carefully, squatting with the knees and hips only.
9. Do not attempt to lift by bending forward. Bend the hips and knees to squat down to the load, keep it close to the body, and straighten the legs to lift.

See Appendix A for illustration of this technique.

Power Lift - Use the power lift for objects too large for a person to straddle. This lift is very similar to the basic lift. In the power lift, the object shifts a person's center of gravity forward and a person must push their buttocks out to compensate.

1. Put one foot in front of the other using a wide stance.
2. Keep the back straight, push the buttocks out and use the legs and hips to lower down to the object.
3. Move the load as close to the body as possible.
4. Grasp the object firmly with both hands.
5. Prepare for the lift: look forward.
6. Lift upwards following the head and shoulders. Hold the load close to the body. Lift by extending the legs with the back straight, buttocks out (exaggerate this position), and breathe out while lifting.

See Appendix A for illustration of this technique.

Tripod Lift - Use the tripod lift for objects with uneven weight distribution (example: sacks of food). Recommended for people with decreased arm strength and not recommended for people with bad knees.

1. Put one foot next to the object. Keep the back straight, push the buttocks out and slowly lower down onto one knee. (For support as a person lowers down, put one hand on a stool or on their thigh for support.)

LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES

2. Position the object close to the knee on the ground.
3. Grasp the object firmly with both hands.
4. Slide the object from the knee on the ground to mid-thigh. Keep the head forward, back straight, buttocks out, and lift the object onto the opposite thigh.
5. Put both forearms under the object (with palms facing upward) and hug the object to your stomach and chest.
6. Prepare for the lift: look forward.
7. Lift upwards following the head and shoulders. Hold the load close to the body. Lift by extending the legs with the back straight, buttocks out, and breathing out while lifting.

See Appendix A for illustration of this technique.

Partial Squat Lift - Use the partial squat lift for small light objects with handles close to knee height.

1. Stand with the object close to your side.
2. Place feet shoulder width apart, with one foot slightly ahead of the other.
3. Place one hand on a fixed surface (such as a table or stool) or thigh.
4. Keep back straight, push buttocks out, and slowly lower down to reach the object's handles.
5. Prepare for the lift: grasp the object and look forward.
6. For support while lifting, push down on the fixed surface (or on the thigh).
7. Lift upwards following the head and shoulders. Lift by extending the legs with the back straight, buttocks out, and breathe out while lifting.

See Appendix A for illustration of this technique.

Golfers' Lift - Use the golfers' lift for small light objects in deep bins and to pick small objects off the floor. Recommended for people with knee problems or decreased leg strength.

1. Place hand near the edge of a fixed surface (such as the edge of a table or bin). This hand will support the upper body during the lift.
2. Keep the back straight and raise one leg straight out behind while leaning down to pick up the object. The weight of the leg will counterbalance the weight of the upper body.

**LOYOLA UNIVERSITY CHICAGO
GUIDELINES FOR SAFE LIFTING TECHNIQUES**

3. Grasp the object firmly.
4. Prepare for the lift: look forward. Keep the leg raised as the lift is initiated.
5. To lift, push down on the fixed surface as the leg is lowered. Keep the back straight and breathe out while lifting.

See Appendix A for illustration of this technique.

Pivot Technique - When a person must lift an object and then turn to carry it away, it is common to twist the body. Twisting while lifting can cause serious damage to the tissues of the back. Use the pivot technique to avoid twisting while lifting.

1. Lift the load using any of the previous techniques.
2. Hold the load very close to the body at waist level.
3. Turn the leading foot 90 degrees toward the direction going to.
4. Bring the lagging foot next to the leading foot. Do not twist the body!

See Appendix A for illustration of this technique.

Overhead Lift - Use the overhead lift to place objects on an overhead shelf. This lift begins with the object in a person's hands. Be careful! Overhead lifts put a person at increased risk for muscle strain. It can be difficult to maintain balance during the lift. Only use this lift when absolutely necessary.

1. Hold the object very close to the body.
2. Keep feet shoulder width apart, one foot slightly ahead of the other.
3. Prepare for the lift: look forward.
4. Raise the object to shelf height using the arm and shoulder muscles. Keep the object close to the body and breathe out while lifting.
5. While reaching the shelf, slowly shift weight from the back foot to the forward foot. Keep the back straight.
6. When the load reaches the edge of the shelf, push the object onto the shelf.

See Appendix A for illustration of this technique.

LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES

Essential Do's for proper lifting.

A few essential don'ts to keep in mind for good lifting ergonomics:

- Never twist the torso while lifting. Move the feet in the direction being travelled. Stay "nose between your toes."
- Keep the object to be lifted or carried close to the body.
- Never lift a heavy item above shoulder level. Whenever possible, items should be stored below shoulder height to reduce lifting demands.
- Never carry a load that obstructs the vision.
- Never hold a breath while lifting, moving, and setting the load down.
- If a heavy object needs to be moved, it is typically safer to push the object instead of pulling the object.

**LOYOLA UNIVERSITY CHICAGO
GUIDELINES FOR SAFE LIFTING TECHNIQUES**

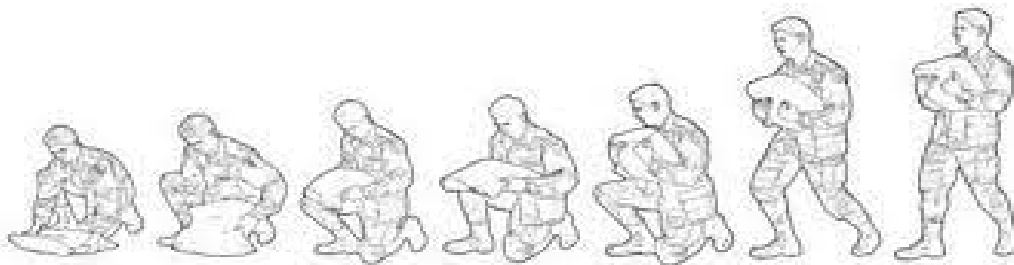
APPENDIX A



BASIC LIFT



POWER LIFT



TRIPOD LIFT

**LOYOLA UNIVERSITY CHICAGO
GUIDELINES FOR SAFE LIFTING TECHNIQUES**



PARTIAL SQUAT LIFT

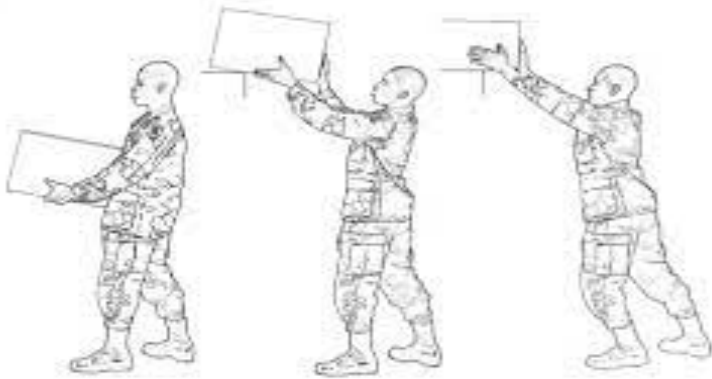


GOLFERS' LIFT



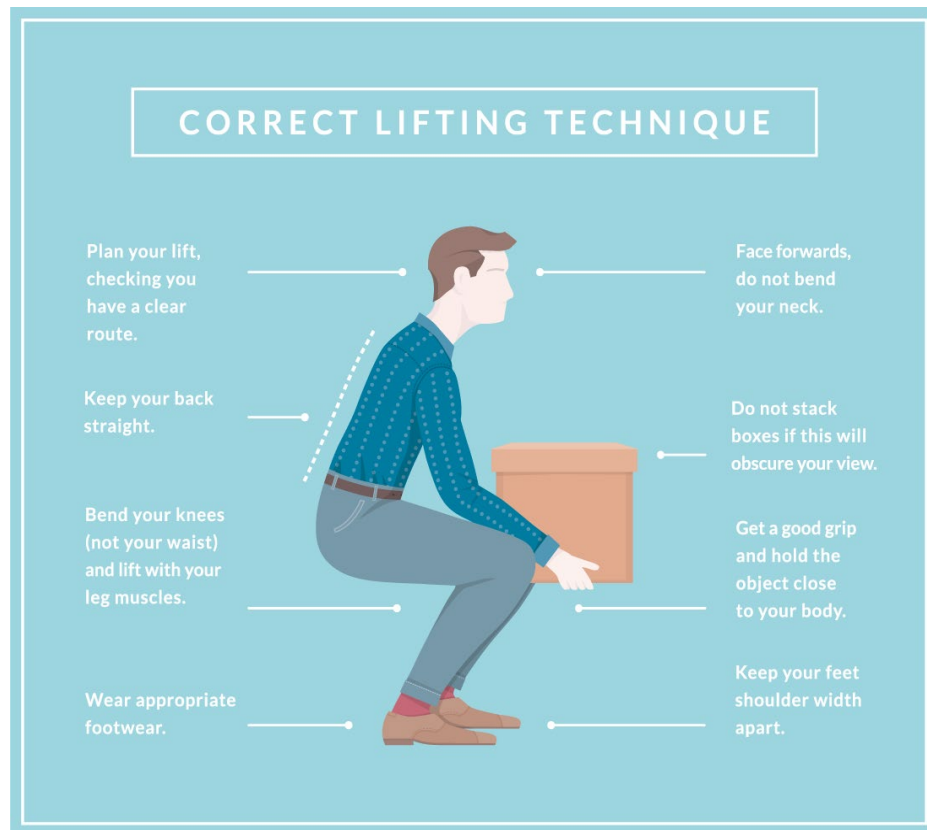
PIVOT TECHNIQUE

LOYOLA UNIVERSITY CHICAGO GUIDELINES FOR SAFE LIFTING TECHNIQUES



OVERHEAD LIFT

CORRECT LIFTING TECHNIQUE



- Plan your lift, checking you have a clear route.
- Keep your back straight.
- Bend your knees (not your waist) and lift with your leg muscles.
- Wear appropriate footwear.
- Face forwards, do not bend your neck.
- Do not stack boxes if this will obscure your view.
- Get a good grip and hold the object close to your body.
- Keep your feet shoulder width apart.