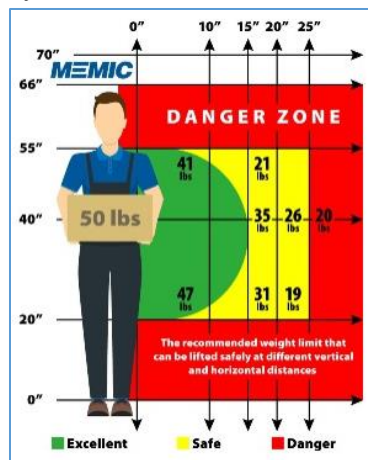


## Proper Lifting Techniques

At shoulder height, the dynamics and forces around the shoulder change and become poorer and weaker. According to the review of literature by Rhode and Rhode title “Occupational Risk Factors of Shoulder Tendon Disorders 2015 Update,” when lifting an object to above shoulder height, the core and stabilizer muscles become less efficient, so we change our body mechanics and the risk of shoulder injury increases dramatically.



The graphic above illustrates safe lift zones and appropriate weights in those zones. The green area is the best zone often referred to as the power zone. The red zone is the no lift zone and is appropriately above shoulder and below knee height. Additionally, the farther a person reaches from the body, the lesser the weight safely handled (yellow zone). The data also shows that 35 pounds is the most an individual should pick up without assistance.

At the lower end of a lift, moving below the knee increases the risk and exposure to the back, especially for the lumbar region. Research completed by Al Nachemson illustrated the change in disc pressure with different activities. Lifting activities greatly increase the disc pressure. Better body mechanics reduce the force, and keeping the load off the floor in an upright position reduces the force further.

### Safe Lifting Guidance:

Here is a fact that will make you pause before you lift from the floor. Bending at the waist and reaching to the floor with no weight in the hands increases the pressure in the lumbar disc to approximately 1,000-inch pounds.

NIOSH recommends limiting lumbar disc pressure to no greater than 770-inch pounds. Forces beyond 770-inch pounds begin to physically change the health of the disc. Lifting properly can reduce the force, but proper technique is a skill rarely mastered or used by people in a dynamic work environment.

Through these studies, we know the safest lift range is between standing knee and shoulder height. This is a basic guideline not taking into consideration reaches and twists away from the body, as well as coupling (grip). Work environments outside these ranges increase the risks of shoulder and back injuries.

**Here are a few simple considerations:**

- Keep lifts between knee and shoulder height
- Limit weight to 35 pounds and consider lift assist devices
- Avoid placing work on the floor.
- Consider dynamic pallet lifts to keep the load in the best position.
- Anything lifted manually over 35 pounds should be a two-person lift



Follow these tips to avoid compressing the spinal discs or straining your lower back when you are lifting:

- **Keep a wide base of support.** Your feet should be **shoulder**-width apart, with one foot slightly ahead of the other (karate stance).
- **Squat** down, bending at the hips and **knees** only. If needed, put one knee to the floor and your other knee in front of you, bent at a right angle (half kneeling).
- **Keep good posture.** Look straight ahead, and keep your back straight, your chest out, and your shoulders back. This helps keep your upper back straight while having a slight arch in your lower back.
- **Slowly lift** by straightening your hips and **knees** (not your back). Keep your back straight, and do not twist as you lift.
- **Hold** the load as close to your body as possible, at the level of your belly button.
- **Use your feet** to change direction, taking small steps.
- **Lead with your hips** as you change direction. Keep your shoulders in line with your hips as you move.
- **Set down** your load carefully, squatting with the knees and hips only.

Keep in mind:

- Do not attempt to lift by bending forward. Bend your hips and knees to squat down to your load, keep it close to your body, and straighten your legs to lift.
- Never lift a heavy object above shoulder level.
- Avoid turning or twisting your body while lifting or holding a heavy object.

<https://ohsonline.com/Articles/2018/02/01/Keep-Lifts-Between-the-Knees-and-Shoulders.aspx?Page=2>

<https://www.webmd.com/back-pain/proper-lifting-technique>