Moving and lifting are routine features of daily life. What's the best way to move and lift, in order to be effective and safe?

Moving and lifting are simple physics in action. The body is a system of pulleys, levers, and cables of muscles, tendons, bones, and other tissues that are all coordinated by the nervous system, and “fed” by the cardiovascular and other systems. Learned movement patterns allow us to perform activities like climbing stairs or lifting without intense concentration. This is a useful skill, as we cannot afford to focus like a toddler with every step we take; but if we have faulty, ingrained motion patterns, unconscious movements can cause problems. The key is to consistently use adaptive patterns that take advantage of our unique internal physics (the way we’re “put together”), and to effectively overcome any injuries or faulty mechanics to allow us to move forward with grace.

Physics tells us that a weight (force) held (or applied) far from an axis of rotation will require more force to hold or move, compared to a weight or force applied closer to the axis of rotation. Sound complicated? An easy way to understand this is to hold your arm out in front of you, and have a friend press down on your hand while you resist. Then, have them press down on your elbow, with the same force. Then, have them press down with the same force halfway between your elbow and your shoulder. You'll notice that it's much easier to resist the force applied close to the shoulder (the pivot point), compared to the force applied at the hand. This is just physics, applied to humans -- so-called “biophysics.”

How does this apply to moving and lifting? First, keep the load in front of you. Even the slightest twist dramatically stresses the spinal discs in ways they are not optimally designed to tolerate. Also, consider common activities like lifting a bag of groceries, or a baby. If you lift at arm's-length (as with a baby who needs a diaper change), it takes more force to lift. Hold the weight closer to your body, and you accomplish the same task with less effort. Olympic power-lifters literally scrape the weight up the body as they clean-and-jerk. While a baby or a computer monitor may weigh less than a stacked Olympic bar, take advantage of the “secrets” of top athletes and physics, and you’ll likely save yourself some work -- and possibly an injury.

Another key to lifting is a phenomenon called flexion relaxation. When you stand vertically, your low back muscles are nearly turned off (“quiescent,” which means “quiet”), with only mild background activity and tone. Bend forward just a few degrees, and the low back muscles turn on. Bend forward substantially, and normal low back muscles go quiet again, a phenomenon called “flexion relaxation” described back in the 1950s. What does this mean for moving and lifting? When lifting weight, flex slightly forward so the low back muscles are active and protecting you. Lifting with too straight a spine, or bending too far forward, are pathways to injury.

Want to move and lift and live, well?

- Consider taking an extra trip when moving multiple objects.
- Warm up, and get loose.
- Ask for help, as team lifting beats what you can do alone.
- When moving uneven loads (nurses and EMTs often lift or assist patients), keep them close to your own body; and if they may go “dead weight,” be pre-positioned behind them to literally slide their body down your own thigh to the floor.
- Use external devices like dollies and wheels.
- Work with a doctor of chiropractic to:
  - optimize your body mechanics,
  - minimize or eliminate residuals of weaknesses and imbalances and injuries,
  - learn the rules that allow you to avoid injury and be more effective, whether as a parent, a worker, an athlete, or simply a person desiring to live life to the fullest.

Your doctor of chiropractic’s role is to help you feel and FUNCTION at your best—whether you are in pain, feeling better, or feeling great. For more information on ways to help your entire family live better, ask Dr. Shaye for guidance.

**References:**

1 The Function of the Erectores Spinae Muscles in Certain Movements and Postures in Man. Flody, WF and Silver, PHS. J Physiol (1955) 129, 184-203