

## WHAT IS BODY MECHANICS?

Body mechanics can be described as the efficient use of one's body to produce motion that is safe, energy conserving, and anatomically and physiologically efficient and that leads to the maintenance of a person's body balance and control.

Proper use of body mechanics will conserve energy, reduce stress and strain on body structures, reduce the possibility of personal injury, and produce movements that are safe.

## PRINCIPLES AND CONCEPTS OF BODY MECHANICS

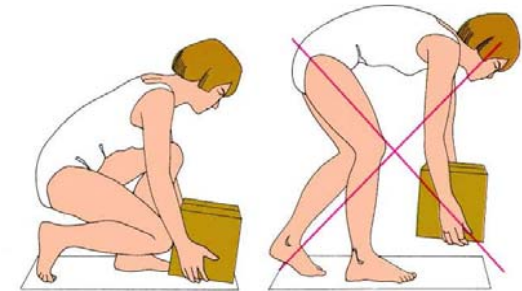
It is important to select and apply techniques that will, in some situations, reduce the adverse effects of gravity or friction, or in other situations, enhance the positive effects of these two forces to reduce expenditure of energy, avoid undue stress or strain to body systems, and maintain control of your body.

## PRINCIPLES OF BODY MECHANICS

1. Remain close to the object; stoop or squat to lift.
2. Use the largest and strongest muscles of your arms, legs, and trunk to lift, push, pull, or carry an object.
3. Widen your base of support (BOS) so that your vertical gravity line (VGL) falls within your BOS.
4. Use short lever arms for better control and efficiency when lifting or carrying.
5. Avoid twisting your body when you lift.
6. Maintain your center of gravity (COG) close to the object's COG; raise or lower your COG or the object's COG.
7. When possible, push, pull, roll, or slide an object rather than lift it.



## BODY MECHANICS



This brochure is a supplement to the Body Mechanics Training Program. For more information, contact the Manager of Environmental Health and Safety, (330) 672-1950, [dbaden@kent.edu](mailto:dbaden@kent.edu), (330) 672-9565 or [dehead@kent.edu](mailto:dehead@kent.edu)

**Environmental Health  
and Safety**

## GOOD POSTURE

**Standing** – rest 1 foot on a low stool to support your back. If possible, raise or lower the work surface, so that your shoulder and neck can stay relaxed.

**Lifting** – get close to the object; keep your back and neck in alignment; bend your hips, and lift with your legs, not your back.

**Bending** – keep back and neck in alignment and bend at the hips. Try to tighten the abdominal muscles to protect your lower back as you bend.

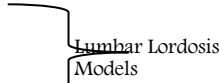
**Sitting** – set with buttocks against back of chair with support for back; feet and arms supported, and chair close to surface you will be working on.

**Turning** – Keep feet and hips moving with upper body; don't twist; lift feet as you turn.

**Reaching** – Raise your body position by standing on a wide-based footstool or ladder.

**Carrying** – when you must carry something, put equal amount of weight on both sides of your body.

## LIFTING MODELS

- Traditional Model
  - Deep Squat Lift
  - Power Lift
  - Straight Leg Lift
  - One-Leg Stance Lift (“Golfer’s Lift”)
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There are many differing opinions about which model is most appropriate or best to use. Research studies have not shown or proven that one method is superior to, safer than, or more effective than another method.

It has been hypothesized that lumbar lordosis models provide greater protection to the lumbar region of the spine, particularly during the lifting of a heavy object.

## PUSHING, PULLING, REACHING, AND CARRYING

Many of the same principles applied to lifting also apply to pushing and pulling activities. You should use a crouched or a semisquat position to push or pull. This position lowers your COG nearer to the object's COG, which increases stability, reduces energy expenditure, and improves control of the object.

## POSTURE AND BODY CONTROL

Instruction in ways to maintain the proper condition and functions of muscles, ligaments, and joint structures through the use of relaxation, flexibility, and strengthening activities or aerobic exercise are important components of education.

Methods that can be used to protect or relieve back stress, are the use of a footstool while standing or the use of a lumbar roll while sitting.

Balance work, recreational, and rest activities to avoid chronic overuse syndromes or the development of specific dysfunction.

You are the only person who has direct control over your lifestyle, behavior, posture, and use of your body.