Body Mechanics / Ergonomics

Body Mechanics / Ergonomics .................................................. BM: 1

1. Introduction ........................................................................ BM: 1
2. Purpose/Overall Goal .......................................................... BM: 1
3. Course Objectives ............................................................... BM: 1
4. Proper Body Mechanics .................................................... BM: 2
5. Posture ................................................................................ BM: 3
6. Transferring and Ambulating Patients .................................. BM: 4
7. Exercising .......................................................................... BM: 6
8. ANA’s Safe Patient Handling and Mobility ......................... BM: 7
9. Conclusion ......................................................................... BM: 8
Body Mechanics/Ergonomics

INTRODUCTION

Patient caregiving is among the professions with the highest risk for musculoskeletal injuries. In the course of patient care, you bend your back, flex your arms, push with your legs, and much more. Back injuries and shoulder strain from continuously repositioning, lifting, and transferring patients can be severely debilitating.

Safe patient handling techniques among nurses, nursing assistants, physical therapists, and other healthcare workers is of paramount importance in preventing these musculoskeletal injuries. The best way to accomplish this is to practice good body mechanics.

PURPOSE/OVERALL GOAL

This module outlines the essentials of proper body mechanics for healthcare workers. It includes specific recommendations for performing safe work-related activities as well as suggestions for exercises to increase strength and flexibility and help prevent injury.

The goal of this module is to provide healthcare workers with an understanding of good body mechanics and how proper use of body mechanics can help to avoid injury.

COURSE OBJECTIVES

After completing this module, the learner should be able to:

1. Define proper body mechanics
2. Describe the correct posture for standing, sitting, and lifting
3. Demonstrate proper body mechanics techniques in patient care
4. Understand exercises designed to increase flexibility and strength
5. Understand ANA standards for safe patient handling and mobility
PROPER BODY MECHANICS

Using the safest and most efficient methods of moving and lifting is known as body mechanics. Body mechanics is a term that describes the coordinated effort of the muscles, bones, and nervous system in accomplishing certain tasks.

It is important to understand how the body’s mechanical forces work together, in order to avoid musculoskeletal injuries as well as injury to the patient. Your physical strength is not as important as how efficiently you use your body.

When moving a patient, keep in mind these general rules of good body mechanics:

1. Move as close as possible to the patient’s bed.
2. Keep your abdominal muscles contracted and your lower back in its normal position.
3. Keep your head upright and hold your shoulders up.
4. Bow slightly using your hips and squat.
5. Don’t twist your body; always do a side-step or pivot on the balls of your feet.
6. Push up from your knees and use your own momentum to help move the patient.

Focus on these three concepts:

1. Maintain a stable center of gravity to evenly distribute your body weight, and keep your center low for better balance. Rather than bending, flex your knees and keep your torso straight.
2. Maintain a wide base of support and greater stability by spreading your feet apart to a reasonable distance and flexing your knees.
3. Maintain proper body alignment by keeping your back upright when performing maneuvers. Equal activity balance in the upper and lower parts of your body can reduce your risk of a back injury.
POSTURE

The best place to practice good body mechanics is with your own posture.

- When proper body mechanics are used to stand and walk, you will have more energy and less fatigue because unnecessary stress on any one muscle group is eliminated.
- No activity puts more continuous pressure on the lumbar region of the lower back than sitting. By using correct body mechanics, you will be able to sit longer and more comfortably without causing back pain and injury.
- Lifting too much weight or lifting incorrectly can cause hernias, ruptured discs, and permanent back injury.

Standing:
1. Hold your head straight and centered, not tilted to any one side.
2. Maintain the natural curves of your spine and keep your shoulders straight, not slumped forward.
3. Your abdomen should be held up and in to help support your back, with your hips straight.
4. Each leg should support an equal amount of body weight, with your knees forward and slightly flexed.
5. Your feet should be about shoulder-width apart, with your toes pointed forward.

Sitting:
1. Hold your head straight and centered, with your spine straight. Your body weight should be evenly distributed on your buttocks and thighs.
2. Keep your hips and your knees flexed at 90-degree angles.
3. Your knees should be either level with your hips or slightly above them, and they should be clear of your chair so that there is no pressure on the nerves and blood vessels behind your knees.
4. Keep your feet flat on the floor to help support the weight of your legs; use a footrest if needed.
5. Sit back in your chair and let it support the lumbar region of your back.
6. To avoid bending forward, position your work closer to you. To take additional pressure off your back, support your forearms on a desk, chair armrests, or in your lap whenever possible.

Lifting:
1. If you need to lift an object off the ground, widen your stance and squat down to lower your center of gravity.
2. Keep your back straight and tighten your abdominal muscles.
3. Grasp the object and bring it as close to you as possible.
4. Then, use the power of your quadriceps and gluteal muscles to extend your legs to lift. Always lift with your legs and never with your back muscles, as this can overstress your back and lead to disc injury.
TRANSFERRING AND AMBULATING PATIENTS

In the course of patient care, you may be required to turn and move patients on a regular basis. It is important to do so without endangering either the patient or yourself. Practicing good body mechanics when lifting and moving patients is vital.

Always use patient transfer techniques that apply proper body mechanics.

- Wear comfortable clothes with a loose fit and footwear that will not slip.
- Be sure that the floor is dry and the area is clear of obstacles.
- Explain to the patient how you will make the transfer, and have the patient assist you as much as possible.
- Whenever necessary, have someone help you in the transfer.

Transfer aids can play an important role in avoiding injury. The time it takes to use these devices is greatly offset by the time it would take to recover from an injury.

- You can provide support to a weak or unsteady person by using a transfer belt (also called a gait belt), a sturdy webbed belt with a buckle that easily secures around the patient’s waist.
- In addition, mechanical lifts, roller boards, sliding boards, flexible patient movers and slings, and pivoting turntables can facilitate patient transfers and greatly reduce the level of manual effort required to move a patient.

To accomplish bed-to-chair transfers:

1. Position the wheelchair close to the bed, on the patient’s strongest side, and lock it at a slight angle.
2. Have the patient sit on the edge of the bed with feet shoulder-width apart and flat on the floor. The patient should wear nonslip footwear.
3. Explain what you are about to do and secure a transfer belt around the patient’s waist.
4. Place yourself in front of the patient and block the patient’s leg closest to the chair with your foot and leg.
5. Your other leg should be slightly behind and spread in a stance that provides a solid base of support and control of the lift.
6. Grasp the sides of the transfer belt and keep your head and back straight while bending at the knees.
7. The patient should lean toward you, and hold your forearms if possible. Do not allow the patient to hold onto your neck or shoulders.
8. With your back straight, lift with your legs to bring the patient to a standing position. Keep the patient as close to you as possible.
9. Pivot on the balls of your feet or side-step and position the patient to the chair.
10. Gently lower the patient into the chair, bending at your knees, not your back. This basic technique can also be used for chair-to-chair, chair-to-commode and chair-to-bed transfers.
To accomplish bed-to-stretcher transfers:
1. Bed-to-stretcher transfers require the assistance of another person and are best done with a lift or draw sheet. If a lift sheet is not available, using the actual bed sheet is safer than attempting to lift the patient without a sheet.
2. Begin by positioning the patient on the lift sheet and as close to the edge of the bed as possible.
3. Raise or lower the bed and stretcher to equal heights. Position the stretcher against the side of the bed and lock the wheels.
4. While keeping your back as straight as possible, reach over the stretcher and grasp the lift sheet.
5. Be sure to hold the corner of the pillow as well as the lift sheet to support the patient’s head during the move.
6. Your assistant should grasp the sheet in the same manner and be prepared to push as you pull.
7. The assistant may find it easier to place one or both knees on the patient’s bed to avoid leaning over excessively.
8. Using a three count, lift and pull the patient onto the stretcher while your assistant lifts and pushes.
9. Several short lifts may be preferable to attempting one large movement.

To assist a patient with ambulation:
1. Allow the person to sit up in the bed for a few minutes before helping him or her out of bed.
2. Have the patient wear nonslip footwear.
3. Use a transfer belt for safety.
4. Position yourself to the side and slightly behind the patient.
5. If the patient is unsteady, two assistants are required (one may be a family member). Hold the patient’s upper arms and support the lower arms and hands.
6. If the patient needs firm support, two assistants are required. The assistants grasp each other’s arms behind the patient’s back, and the patient puts his or her arms around the shoulders of the assistants.
7. Remember, if the patient becomes faint and is going to fall, you can avoid injury by safely easing him or her to the floor.
EXERCISING

Because working in a healthcare environment can be physically demanding, it is a good idea to stay in good physical shape. Exercising at home at least three times a week can help you avoid injury and increase your flexibility, strength, and stamina.

Certain stretches and exercises are especially helpful for healthcare workers. Just be sure that all exercises are “pain free.” If you feel discomfort, you may not be ready to do that specific exercise.

Flexibility Exercises:
  - Quadriceps Stretch – Using a towel or band, lie on your stomach, attach the band to your foot, and pull your heel to your buttocks. Hold this stretch for 1 minute. Repeat three times for each leg.
  - Hip Flexor Stretch – Kneel with one knee on the ground. Raise your same-side arm up and backward to cause your hips to shift forward and your back to extend. Hold for 20-30 seconds. Repeat three times for each leg.
  - Adductor Stretch – Prop up the inside of your ankle on a table about the height of your upper thigh, raise your opposite arm over your head, and lean sideways toward the table. Hold for 20-30 seconds. Repeat three times for each leg.
  - Hamstring Stretch – Prop the back of your heel on a table about the height of your upper thigh, keep your back straight, and lean forward at the hips. Hold for 20-30 seconds. Repeat three times for each leg.

Strength Exercises:
  - Supine Abdominal Draw-In – Lie on your back on a mat with your knees up and feet flat on the floor. Pull your abs in and push your lower back to the mat. Repeat 20 times.
  - Abdominal Draw-In With Knee to Chest — Lie on your back on a mat and maintain the abdominal draw-in as you bring one knee to your chest and back out again. Don’t grab your knee with your hand. Repeat 10-20 times with each leg.
  - Abdominal Draw-In With Heel Slide – Lie on your back on a mat and maintain the abdominal draw-in as you bend your knee and slide your heel toward your buttocks and back out again. Repeat 10-20 times with each leg.
  - Abdominal Draw-In With Double Knee to Chest – Lie on your back on a mat and maintain the abdominal draw-in as you bring both knees to your chest at the same time, then back out. Repeat 10-20 times.

Additional helpful exercises may be found in this Princeton University publication:
ANA’s SAFE PATIENT HANDLING AND MOBILITY

The American Nurses Association has developed national standards for safe patient handling and mobility (SPHM). The goal is to establish a uniform, national foundation for SPHM to prevent injuries in both healthcare workers and patients.

The eight evidence-based ANA SPHM standards are:

1. Culture of Safety – Establish a culture that emphasizes safety over competing goals.
2. Sustainable SPHM Program – Develop a formal program to reduce risk of injury for workers and patients.
3. Ergonomic Design Principles – Design the healthcare environment to include injury prevention considerations.
4. SPHM Technology – Have assistive tools, such as equipment, devices, accessories, software, and multimedia resources, available at the point of care to facilitate SPHM.
5. Education, Training, and Maintaining Competence – Establish an effective system of training and education to maintain SPHM competence in those who provide direct patient care.
6. Patient-Centered Assessment – Ensure that each plan of care is adapted to meet the SPHM needs of the patient and specifies appropriate technology and methods.
7. Reasonable Accommodation and Post-Injury Return to Work – Develop a comprehensive SPHM program that can help employers provide reasonable accommodations to healthcare workers who were injured.
CONCLUSION

Injury on the job can be a traumatic and debilitating experience. It may result in loss of work and the need for ongoing medical treatment. Work time lost due to injury can also be detrimental to the facility where you work and can put additional pressure on your coworkers.

Using proper body mechanics can greatly reduce the risk of injury to both you and your patients. Because you are working with your body’s natural design, you will improve your ability to work safely and efficiently.

REFERENCES: