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Pamphlet 385-8

Safety

SAFETY BACK INJURY PREVENTION

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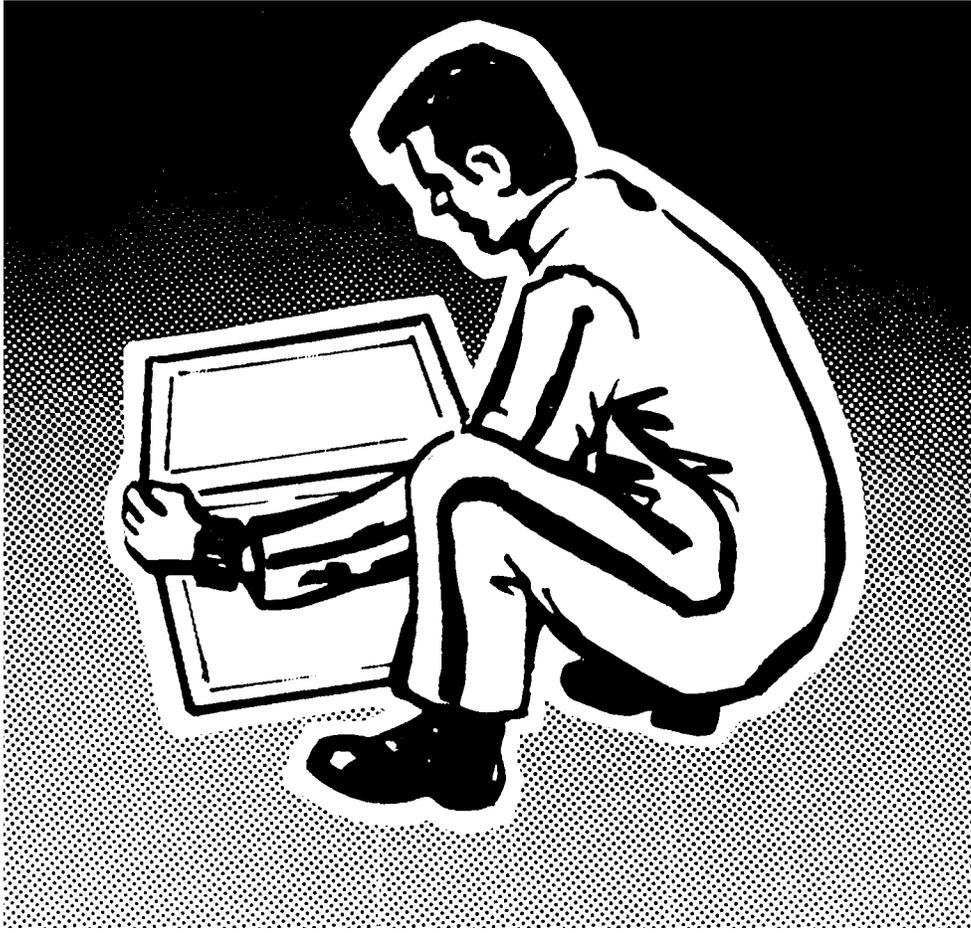
SUMMARY of CHANGE

DA PAM 385-8
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Not applicable.

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PREFACE

This pamphlet provides guidance to all Department of the Army personnel concerning procedures for the prevention of back injuries associated with work activities.

This pamphlet contains information applicable to all components of the Army. Additional technical guidance aimed at occupations having a high risk of back injuries will be provided periodically.

Safety

SAFETY BACK INJURY PREVENTION

By Order of the Secretary of the Army:

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Summary. This pamphlet provides procedures for the prevention of back injuries associated with work activities. It contains conditioning exercises and material to use when training personnel in proper lifting techniques.

Applicability. This pamphlet applies to the Active Army, the Army National Guard (ARNG), and the US Army Reserve (USAR).

Proponent and exception authority. The proponent agency of this pamphlet is the U.S. Army Safety Center.

Interim changes. Interim changes to this pamphlet are not official unless they are authenticated by the Adjutant General. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested Improvements. Users are invited to send comments and suggested

improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to U.S. Army Safety Center, ATTN: PESC-SA, Fort Rucker, AL 36362-5363.

Impact on New Manning System.

This pamphlet does not contain information that affects the New Manning System.

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Chapter 1 General

1-1. Purpose

This pamphlet provides guidance to all Department of the Army personnel concerning procedures for the prevention of back injuries associated with work activities. Back injuries consistently account for one-third of all civilian injuries and a lesser but still substantial percentage of military injuries. Losses associated with back injuries are estimated to be in excess of \$8 million annually. Experience within and outside the Army has shown that these losses can be dramatically reduced by a well-targeted prevention effort that yields a high benefit to cost ratio.

1-2. Scope

This pamphlet contains information applicable to all components of the Army. Additional technical guidance aimed at occupations having a high risk of back injuries will be provided periodically.

1-3. Responsibilities

Commanders and activity supervisors will assure that the back injury procedures described in this pamphlet are integrated into the operational procedures of their organizations to minimize back injuries.

1-4. References.

- a. **DOD Dir 4145.19-R-1, Storage and Warehousing Facilities and Services**, dated 13 August 1975, with Change 1-3.
- b. **DOD Inst 6055.1, Department of Defense Occupational Safety and Health (OSH) Program**, January 1978, with Change 1.
- c. **AR 385-10, The Army Safety Program**, dated 1 February 1979.

Chapter 2 Prevention Procedures

2-1. Prevention Approaches

There are several approaches available to an activity manager to control back injuries. These include the following in order of preferred application:

- a. **Eliminate manual handling from the job.** Automate the lifting task using powered lifting devices as described in Appendix A.
- b. **Use mechanical aids to minimize manual handling.** Various mechanical aids, as outlined in Appendix A, are often useful. Installation safety personnel and/or MEDDAC occupational health personnel are trained to provide technical advice on improved job procedures and work area layout. Practical guidelines to workers on when to obtain assistance in lifting heavy objects are also useful.
- c. **Physical conditioning of personnel.** This technique is especially appropriate for certain high risk groups such as motor vehicle operators whose duties involve occasional extraordinary physical demands such as assisting with loads or heavy maintenance tasks. Proper conditioning keeps muscles and ligaments ready for action and reduces the likelihood of tearing or stretching injuries. Model conditioning exercises are described in
- d. **Safe lifting training.** All employees involved in occupations requiring lifting or manipulating loads with substantial back involvement will receive guidance on proper lifting techniques. This training will be provided during initial job orientations whenever possible. Model training material is in Appendix C. Additional training material for high risk job series and MOS will be provided periodically.
- e. **Supervision.** Supervisory personnel must emphasize proper daily use of safe lifting techniques. This should include positive reinforcement for people who use correct procedures as well as actions for repetitive failure to follow prescribed procedures.
- f. **Accident evaluation.** A key back injury prevention concept is careful investigation of back injuries. A complete investigation of the accident and a medical evaluation will be conducted when appropriate to assure that back pain is the result of traumatic injury and not disease and that the injury was in fact job-related. For civilian employees, only on-the-job injuries involving an initiating event and a traumatic result independent of disease factor will be handled as Army accidents.

2-2. Safety Function Involvement

The activity safety manager should be actively identifying job series and specific activities especially vulnerable to back injuries. Such situations normally warrant specially targeted prevention efforts developed and provided by the safety function for use by commanders and activity supervisors.

Appendix A Back Injury Prevention Engineering Procedures

**Table A-1
Equipment To Reduce Or Eliminate Manual Materiel Handling**

Unpowered Mechanical Aids	Powered Mechanical Aids
1. Barrel tilters	1. Powered industrial trucks
2. Barrel clamps with grips	2. Powered hand trucks
3. Hand carts	3. Power lifts for trucks
4. Pulleys and hand hoists	4. Powered hoists and cranes
5. Rollers	5. Elevators and power lifts
6. Hand trucks	6. Winches
7. Jacks	7. Powered conveyors
8. Wheelbarrows	
9. Carboy handlers and similar aids	
10. Piping systems	
11. Ramps	
12. Manual and gravity conveyors	
13. Tables, benches	
14. Move process closer to stored source of materials or vice versa	

Appendix B Back Injury Prevention Conditioning Exercises

B-1. Reason for having a back exercise program:

- These exercises can help keep your back strong and fit.

B-1. Reason for having a back exercise program:

Important suggestions for a back exercise program:

- Exercise regularly. Sporadic exercising may actually be harmful to your back. Reserve a set time each day, preferably 15 minutes in the morning and 15 minutes at night.
- If you are recovering from a back problem, follow only the exercises, your doctor has recommended to avoid possible further injury.
- If you are experiencing pain, don't exercise. See your doctor if you experience pain while exercising.
- Begin your exercises in the starting position with a warmup period lasting 2 to 3 minutes: loosen up by moving your arms and legs and alternately tightening and relaxing your muscles. Don't overexert initially.

Remember, if you have a history of back problems consult your doctor before beginning an exercise program.

knee-to-chest lift



To help loosen up the back: 1. Assume starting position. 2. Raise right knee to chest. 3. Hold, count to five. 4. Repeat 5 times. 5. Repeat with left leg. 6. Repeat with both legs. NOTE: Don't lift legs with arms or hands.

nose-to-knee touch



To stretch hip muscles, strengthen abdominal muscles: 1. Assume starting position. 2. Raise left knee slowly to chest. 3. Pull left knee to chest with both hands. 4. Raise head, touch nose to knee. 5. Hold, count to five. 6. Repeat 5 times. 7. Repeat with right knee. NOTE: Keep lower back flat on floor.

partial sit-ups



To strengthen stomach and back muscles: 1. Start on back, knees bent. 2. Slowly raise head and neck to top of chest. 3. Reach hands forward, place on knees. 4. Hold, count to five. 5. Slowly return to starting position. 6. Repeat 5 times. NOTE: Keep low back flat on floor.

pelvic tilt



To strengthen back muscles and reduce posture problems: 1. Assume starting position. 2. Tighten buttock muscles. 3. Hold several counts. 4. Relax buttocks. 5. Repeat 5 times. NOTE: Keep lower spine flat against floor.

Figure B-1. Back Injury Prevention Conditioning Exercises

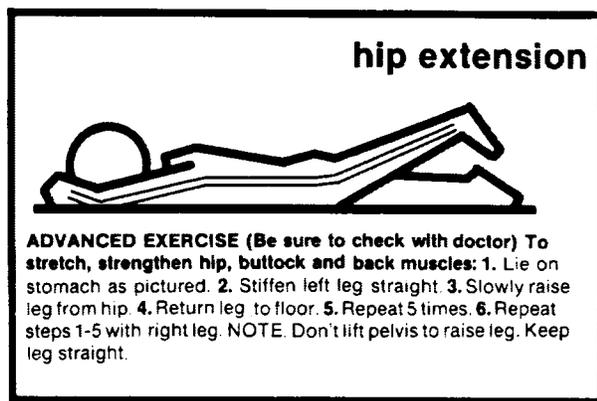
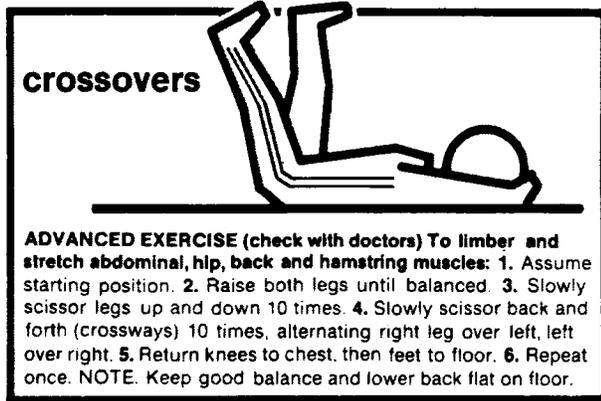
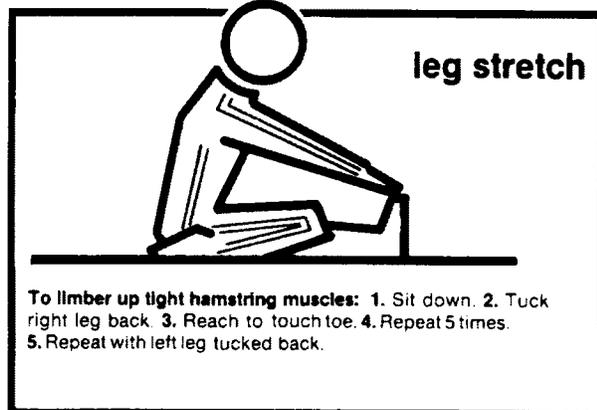
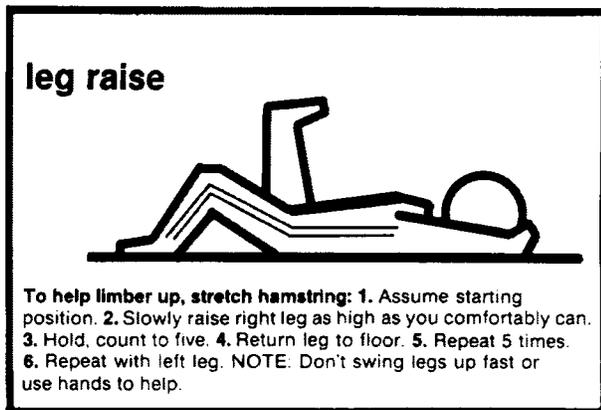


Figure B-2. Back Injury Prevention Conditioning Exercises – Continued

Appendix C Back Injury Prevention Training Outline

C-1. Introduction.

Terminal learning objective. Given a typical work environment, the employee will demonstrate the ability to minimize risk of back injury through the application of five specific procedures designed to be integrated in day-to-day job performance. The employee will feel motivated to apply these procedures.

- Perform a lifting task using proper lifting procedure.
- Discriminate between loads to be lifted and those for which help is to be obtained.
- Describe and demonstrate an exercise regime to strengthen back muscles and thus prevent back injury.
- Describe job-integrated actions for reducing back injury potential.
- Describe the significance of the back injury problem.

(1) Thirty percent of all disabling injuries to employees, including a significant number of permanently disabling injuries, are back injuries.

(2) Back injuries are a leading cause of total disabilities.

(3) Back injuries are a costly problem Army-wide. Costs are approximately \$8 million annually.

C-2. Body.

Learning Objective. Given a variety of objects typically encountered in the work environment, the student will:

- Demonstrate the ability to grasp and lift the object using proper lifting techniques (Handout 1).
- Determine correctly whether to attempt to lift an object or seek assistance (given a subjective assessment of that individual's physical limitations).

Note. The correct lifting technique should be described using the guidance provided with this training outline (Handout 1). Then the instructor should demonstrate proper lifting technique using a variety of items to illustrate proper foot and hand placement and

lifting technique. Finally, all students should demonstrate hands-on proficiency. The standard of performance is correct technique on 95 percent of all lifting/pulling/pushing actions.

C-3. Learning Objective.

Given Appendix B of this pamphlet, demonstrate the back strengthening exercises as follows:

- a. Use proper warmup technique.
- b. Display correct exercise form.
- c. Demonstrate knowledge of appropriate precautions for more advanced exercises.

Note. The instructor should discuss the value of exercise as a prevention technique for back injuries. He should then describe the various exercises using Appendix B as an aid. He should then demonstrate or use a student to demonstrate the correct technique. Each student should then perform the exercises. Be sure proper warmup is included. Stress the appropriate precautions for more advanced exercises as described in the appendix.

The standard is correct technique on 95 percent of the exercises with no dangerous deviations from the prescribed procedures.

C-4. Learning Objective.

Given the list of "Do's and Don'ts" in Handout 2, demonstrate knowledge of the back injury avoidance procedures contained in the handout.

- a. Be able to state proper back care do's.
- b. Be able to state proper back care don'ts.
- c. Describe procedures for relief of back strain.
- d. Describe when to see a doctor because of back pain.

Note. The instructor should review the contents of the handout using questions to the students as a primary means of review. Then he should show MF 20-13098, "To Last a Lifetime," to recap and stress key points from the overall presentation.

C-5. Conclusion.

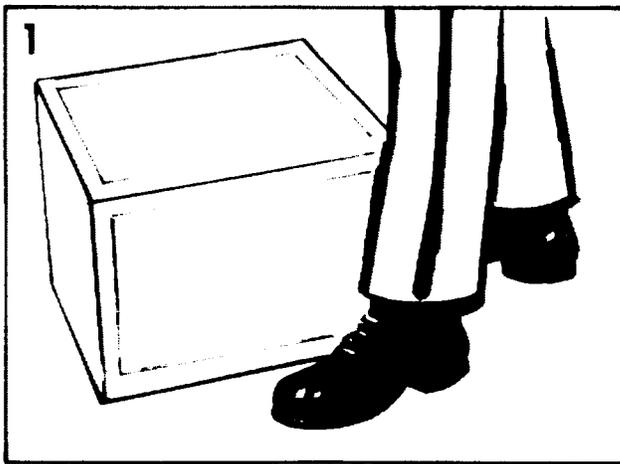
- a. Questions and Answers. Solicit student questions.
- b. Summary. Recap key points related to lifting technique, getting assistance, back exercises and back related do's and don'ts.
- c. Close. Point out that backs belong to people and it is up to each of us to take care of our backs if we expect them to last us for a lifetime.

Handout 1

Proper Way to Lift

Lifting is so much a part of everyday jobs that most of us don't think about it. But it is often done wrong, with bad results: pulled muscles, disk lesions, or painful hernia. Here are six steps to safe lifting.

1. Keep feet parted—one alongside, one behind the object.
2. Keep back straight, nearly vertical.
3. Tuck your chin in.
4. Grip the object with the whole hand.
5. Tuck elbows and arms in.
6. Keep body weight directly over feet.



FEET should be parted, with one foot alongside the object being lifted and one behind. Feet comfortably spread give greater stability; the rear foot is in position for the upward thrust of the lift.

BACK Use the sit-down position and keep the back straight—but remember that "straight" does not mean "vertical." A straight back keeps the spine, back muscles, and organs of the body in correct alignment. It minimizes the compression of the guts that can cause hernia.

NOTE: If the load is too wide to bring between the legs, then it is better to lift it by bending at the waist rather than bending the knees. Do not attempt to lift wide loads using any method if it causes significant exertion. Get help.

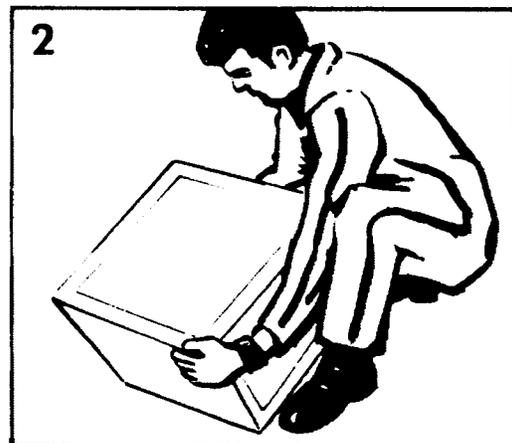
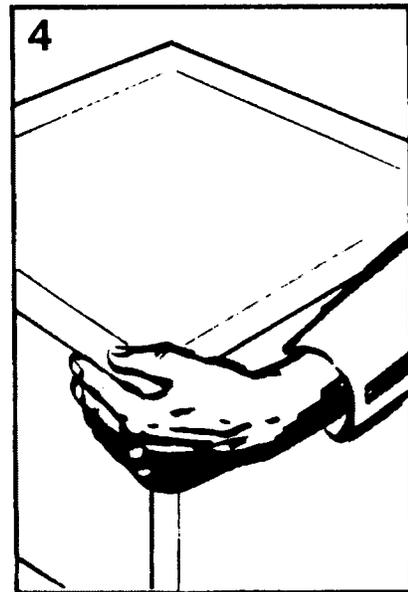


Figure C-1. Proper Way to Lift



ARMS AND ELBOWS. The load should be drawn close, and the arms and elbows should be tucked into the side of the body. When the arms are held away from the body, they lose much of their strength and power. Keeping the arms tucked in also helps keep body weight centered.

PALM. The palmer grip is one of the most important elements of correct lifting. The fingers and the hand are extended around the object you're going to lift. Use the full palm; fingers alone have very little power. Glove has been removed to show finger positions better.



CHIN. Tuck in the chin so your neck and head continue the straight back line and keep your spine straight and firm.

BODY WEIGHT. Position body so its weight is centered over the feet. This provides a more powerful line of thrust and ensures better balance. Start the lift with a thrust of the rear foot.

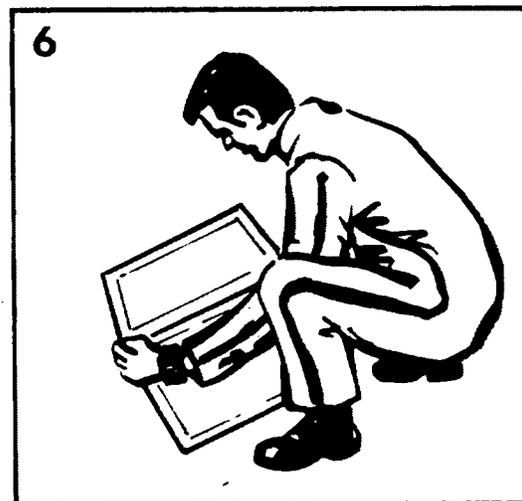


Figure C-2. Proper Way to Lift – Continued

Handout 2

Safe Lifting Tips

- 1.** Crouch as close as possible to the object you are going to lift.
- 2.** Don't lift beyond your strength. Get help!
- 3.** Get solid footing. Put your feet eight to twelve inches apart.
- 4.** Grip firmly with your fingers underneath the load whenever possible.
- 5.** Keep your arms straight and your back as straight up-and-down as possible.
- 6.** Lift gradually. Avoid jerky motions.
- 7.** Lift by using the strong leg muscles. This takes strain off the back muscles.
- 8.** Shift the position of your feet to avoid twisting motions.
- 9.** Put things down by reversing the lifting methods.
- 10.** Check your methods of lifting with your foreman when you must lift odd loads.

Figure C-3. Safe Lifting Tips

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