

Chapter 8, Lifting and Moving Patients

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1. Principles of Safe Patient Movement

Aspect	Proper Technique	Improper Technique
Lifting Position	Shoulder girdle aligned over pelvis, hands close to legs [26]	Lifting while leaning forward or with a straight back bent at the hips [28]
Leg Placement	Legs spread about 15 inches apart or shoulder width [28]	
Body Movement	Bend at the legs to lower upper body [30]	
Lifting Action	Lift by extending properly placed flexed legs [32]	Lifting with arms outstretched [34]
Spinal Alignment	Spinal column remains in alignment; back locked in slight curve [25]	Placing lateral force across the spine and sideways leverage against the low back [35]
Reaching Distance	Extend arms no more than 15 to 20 inches [43]	Reaching beyond recommended distance [46]

Power Grip	Palms up, thumbs extend upward, fingers curled tightly over handle [37]	
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- Proper body mechanics are essential for **safe patient movement** [2].
- Understanding the relationship between the body's structures and physical forces is key [25].
- Maintaining **physical fitness** significantly reduces the risk of injuries [20].
- When lifting, align your shoulder girdle over your pelvis [26].
- Keep your hands close to your legs [26].
- This alignment directs force straight down your spinal cord, minimizing strain [27].
- Avoid lifting by leaning forward or bending at the hips with a straight back [28].
- Spread your legs about 15 inches apart or shoulder width for proper balance [28].
- Balance your weight on the balls of your feet [29].
- Lower your upper body by bending at the legs [30].
- The safest and most powerful way to lift is by extending your flexed legs [32].
- This technique is known as the **power lift** [33].
- Do not lift with your arms outstretched [34].
- Avoid applying sideways force or leverage against your low back [35].
- Keep your arms a safe distance apart [36].
- Use the **power grip** for maximum force when lifting with your hands [6].
- In a power grip, palms face up and thumbs extend upward [37].
- Hands should be about 10 inches apart [37].
- Curl fingers and thumb tightly over the handle [37].
- Fully support the handle with your curved palm [37].
- The same body mechanics principles apply to reaching and pulling [40].
- When dragging, keep your back locked in a slight curve [42].
- Kneel and extend your arms no more than 15 to 20 inches [43].
- Stop pulling when your hands reach the front of your torso [44].
- Reposition yourself by moving back another 15 to 20 inches [44].
- Alternate between flexing your arms to pull and repositioning [44].

- When dragging a patient across a bed, kneel on the bed to avoid overreaching [46].
- Drag the patient to within 15 to 20 inches [47].
- Complete the drag while standing at the side of the bed [48].
- Use a sheet or blanket rather than dragging clothing [49].
- When log rolling, kneel close to the patient [53].
- Lean forward from the hips, keeping your back straight [53].
- Roll the patient without stopping until they rest on their side against your thighs [54].
- Pulling towards you allows your legs to prevent the patient from rolling too far [55].

2. Patient Moving Equipment and Techniques

Equipment Type	Description	Common Uses	Special Features
Wheeled Ambulance Stretcher	Strong tubular metal frame with retractable guard rails and adjustable height [10]	Most common device for moving and transporting patients on flat surfaces [8]	Fluid-resistant mattress, securing straps, head end can be elevated [12]
Backboards	Long, flat, rigid rectangular boards [14]	Carrying and immobilizing supine patients with suspected hip, pelvic, spinal, and lower extremity injuries [15]	Handles along sides and ends for securing patient with straps [17]
Stair Chair	Lightweight folding chair with molded seat, safety straps, and fold-out handles [69]	Carrying conscious patients up or down stairs or inclines [68]	Rubber wheels on back, casters in front for rolling and turning [70]

Bariatric Stretcher	Specialized wheeled stretcher [113]	Moving overweight or obese patients [113]	Higher/wider patient surface, wider wheelbase, increased weight capacity [113]
Flexible Stretcher	Can be rolled up, conforms around patient [118]	Removing patients from or through confined spaces [118]	
Scoop Stretcher	Splits into two or more pieces that fit around patient [129]	Lifting patients from the ground or flat surfaces [130]	Requires access to both sides of the patient [131]
Vacuum Mattresses	Patient placed on mattress, air removed, molds to patient [123]	Immobilizing geriatric and pediatric patients as an alternative to backboards [123]	Provides immobilization, comfort, thermal insulation [125]
Basket Stretchers	Rigid device [127]	Carrying patients across uneven terrain from remote locations [127]	Used for technical rope and water rescues [129]
Neonatal Isolette	Keeps neonatal patients warm, moist, clean, and protected [132]	Transporting neonatal patients (birth to 30 days) [131]	Can be secured on wheeled stretcher or in ambulance [134]
Portable/Folding Stretcher	Tubular frame with rigid fabric [116]	Use in areas difficult to reach [117]	Lighter than wheeled stretchers [118]

- The **wheeled ambulance stretcher** is the most common device for moving and transporting patients [7].
- It has a strong tubular metal frame [10].
- Retractable guard rails prevent patients from rolling off [11].
- The undercarriage allows for adjustable height [12].

- Hinges allow the head end to be elevated [12].
- The mattress is fluid-resistant for easy cleaning [13].
- Patients are secured with straps [13].
- **backboards** are long, flat, rigid boards [14].
- They are used to carry and immobilize supine patients with suspected spinal injuries or multiple trauma [15].
- backboards can also move patients from awkward places [16].
- Holes along the sides serve as handles and allow for securing straps [17].
- Moving a patient by rolling on a stretcher is preferred over carrying when possible [9].
- The **stair chair** is used to carry conscious patients up or down stairs or inclines [68].
- It is a lightweight folding chair with handles and wheels [69].
- Specialized equipment exists for different patient needs [63].
- **Bariatric stretchers** are designed for overweight or obese patients [112].
- They have a wider surface, wider wheelbase, and increased weight capacity [113].
- **Flexible stretchers** are useful for moving patients from confined spaces [118].
- **scoop stretchers** split into pieces to fit around the patient [129].
- **vacuum mattresses** are an alternative for immobilizing geriatric and pediatric patients [123].
- They mold to the patient's body [124].
- **basket stretchers** are rigid and used for moving patients over uneven terrain or during rescues [126].
- A **neonatal isolette** is used to transport infants up to 30 days old [131].
- It keeps the infant warm and protected [132].
- Portable or folding stretchers are used in hard-to-reach areas [116].
- When loading a wheeled stretcher into an ambulance, hold the frame firmly [78].
- Self-loading models have extra wheels for pushing into the ambulance [79].
- Non-self-loading models need to be lowered and lifted [80].
- Clamps inside the ambulance secure the stretcher [81].

3. Types of Patient Moves

- **emergency moves** are used when there is immediate danger before full assessment or care [84].
- Examples include a scene that is unsafe or the patient's position prevents immediate care [84].
- Techniques aim to prevent aggravation of potential spinal cord injury [85].
- Common emergency move techniques include the clothes drag [86].
- The blanket drag involves placing the patient on a blanket to be pulled [87].
- The arm drag involves grasping the patient's wrists with arms extended above their head [88].
- The arm-to-arm drag involves grasping opposite wrists through the patient's armpits [88].
- Removing an unconscious patient from a vehicle alone requires specific steps [89].
- **urgent moves** are necessary for patients with conditions like altered level of consciousness, inadequate ventilation, shock, or in extreme weather [92].
- The **rapid extrication technique** is an urgent move for patients in a vehicle [93].
- This technique is used when urgency exists and the patient must be moved quickly [93].
- It can move a patient from a vehicle to a backboard in about a minute [95].
- However, this technique increases the risk of spinal cord injury [95].
- Consider all options before using rapid extrication [95].
- **Non-urgent moves** are used when the scene and patient are stable [97].
- These moves should be carefully planned [97].
- The **direct ground lift** is for patients found on the ground with no suspected spinal injury [98].
- It is used when the patient needs to be carried a distance to the stretcher [99].
- Two EMTs stand side by side to lift and carry the patient [99].
- The **extremity lift** is for patients with no suspected extremity or spinal cord injury [100].
- It is useful in small spaces as it doesn't require standing side by side [101].
- One EMT is at the head, the other at the feet [102].
- Movements are coordinated with direct verbal commands [102].
- **Transfer moves** include the direct carry and draw sheet method [103].

- A direct carry moves a supine patient from a bed to a stretcher with two or more rescuers [103].
- The draw sheet method uses a sheet or blanket to move a patient from bed to stretcher [104].
- Using a scoop stretcher is another transfer method [104].
- Other carries include the log roll or slide to move a patient to a backboard [105].
- Checking airway, breathing, and circulation is the first step if a patient is not in immediate danger [168].

4. Special Considerations and Patient Positioning

Patient Condition	Recommended Position	Notes
No suspected injury, chest pain/respiratory distress [138]	Position of comfort (typically Fowler or semi-Fowler) [138]	
Shock [139]	Supine position [139]	
Late stages of pregnancy [140]	Transport on their left side [140]	Position on left side if uncomfortable or hypotensive in supine position [141]
Unresponsive, no suspected injury, hip, or pelvic injury [142]	Recovery position [142]	
Nauseated or vomiting [142]	Position of comfort [142]	
Suspected spinal cord injury [106]	Consider geriatric-specific immobilization devices like vacuum mattresses [107]	Skeletal changes in older adults may prevent lying supine on backboards/scoop stretchers [106]

- Most patients transported by EMS are **geriatric patients** [106].

- Skeletal changes in older people can lead to brittle bones, rigidity, or spinal curvatures [107].
- These changes can make lying supine on a backboard or scoop stretcher difficult or injurious [107].
- Consider using **geriatric-specific mobilization devices** such as vacuum mattresses [107].
- **Bariatric patients** (overweight or obese) present unique challenges [108].
- Moving bariatric patients takes an increasing toll on EMT health [108].
- Back injuries are a major cause of missed workdays for EMTs [109].
- Equipment with higher capacity is being developed, but user danger remains [109].
- Special bariatric techniques, equipment, and resources are needed for patients over 350 pounds [63].
- Examples of bariatric equipment include specialized stretchers [112].
- Mnemonic or electric-powered stretchers limit the risk of injury [114].
- Patients must be properly positioned based on their chief complaint [137].
- Patients with chest pain or respiratory distress and no suspected injury should be placed in a position of comfort, usually Fowler or semi-Fowler [138].
- Patients in shock should be placed in the supine position [139].
- Late-stage pregnant patients should be transported on their left side [140].
- The left-side position is especially important if they are uncomfortable or hypotensive in the supine position [141].
- An unresponsive patient without suspected injury should be placed in the recovery position [142].
- Patients who are nauseated or vomiting should be transported in a position of comfort [142].
- Before using **medical restraints**, evaluate for correctable causes of combativeness like head injury or hypoxia [143].
- Follow local protocols and obtain medical authorization for restraints [143].
- Restraining a patient typically requires a minimum of five people: one for each extremity and one for the head [144].
- One EMT should be the team leader [145].
- The patient should be in the supine position [146].
- A prone position can lead to asphyxia [146].
- Apply a restraint to each extremity [147].

- Restrain the patient to a backboard with one arm above the head and the other by the side [148].
- Assess the patient's ABCs, mental status, and circulation after applying restraints [149].
- Document all restraint information [149].

5. Team Coordination and Safety

- **Team actions must be coordinated** when moving patients [82].
- A **team leader** indicates team member positions and describes the steps before lifting [82].
- The team leader uses preparatory commands and countdowns [84].
- Carefully plan ahead by selecting methods with the least amount of lifting and carrying [84].
- Consider potential sources of strain during the move [84].
- Perform a **personal safety assessment** before moving a patient [150].
- Ask yourself if you are physically strong enough [151].
- Assess if there is adequate room for a proper stance [151].
- Determine if additional personnel are needed for assistance [151].
- Injured EMTs cannot provide help [151].
- **Equipment decontamination** is essential after use [135].
- decontamination protects the safety of yourself, the crew, and future patients [135].
- It also prevents the spread of disease [135].
- Know and follow local standard operating procedures for disinfecting equipment [136].