



**Preventing Suspension Trauma**  
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# Preventing Suspension Trauma

- Development of a fall protection plan:
  - Site specific
  - Designate responsibilities
  - Describe methods used for fall arrest and/or fall restraint
  - Address working over water
  - Describe training program
  - Describe fall protection enforcement and disciplinary policy
  - ANSI/ASSE Z359 documents provide a “system approach” to implementation of a fall protection program

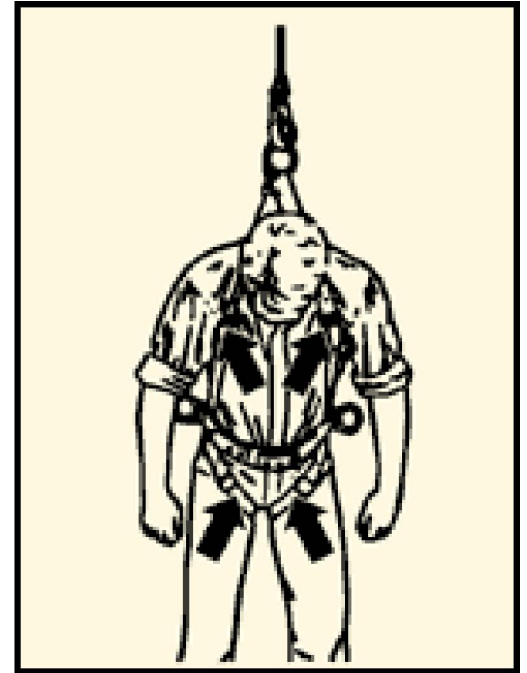
# Preventing Suspension Trauma

- Development of a fall protection rescue plan:
  - Describe responsibilities for employees, site management and rescuers .
  - Rescue plan should be part of an activity hazard analysis (AHA)/Job Safety Analysis (JSA):
    - Self-rescue
    - Assisted self-rescue
    - Mechanically assisted rescue
    - Aerial work platform assisted rescue
    - Mobile crane supported platform assisted rescue
    - Crane used as an anchorage point for rescue
  - Describe assembly, maintenance, inspection and disassembly procedures.
  - Describe rescue enforcement and disciplinary policy.
  - ANSI/ASSE Z359 documents provide a “system approach” to implementation of a fall protection rescue program.



# What is Suspension Trauma?

- Suspension trauma is trauma caused when a worker is forced to stay upright without the ability to move or to use his/her legs
- Can be fatal in 10 minutes, typically 15-40 minutes



**Excess pressure here can cut blood flow to the legs**

# Steps to Reduce the Potential for Suspension Trauma

- To slow the progression of suspension trauma standup:
  - Suspension trauma relief straps
  - Ladders
  - Structural steel
  - Aerial lifts
- In order to stand, the leg muscles must contract to provide support and maintain balance
- Standing helps prevent blood from pooling in the legs

# Be Prepared

- Trained employees and trained rescuers
- First aid/CPR trained personnel
- Provide suspension trauma relief straps
- Provide self-rescue equipment
- Provide equipment for assisted rescue
- Call 9-1-1 immediately – ensure EMS knows that you may have a suspension trauma victim
- Don't depend on 9-1-1 only, every minute counts



# Suspension Trauma Relief Straps

- Deployed by the fall victim to create a loop that he/she can place their feet and press against to simulate standing up
- This allows the leg muscles to contract and can relieve pressure from the leg straps to help improve circulation



# Rescue

- Plan for and practice rescuing suspended fall victims
- Practice both self-rescue and assisted rescue
- Rescue quickly to prevent the suspended fall victim from becoming unconscious
- Treat rescued fall victim for potential suspension trauma
- No apparent injuries place in the “W” position
- Inform EMS that the fall victim must be treated for possible suspension trauma

The “W” Position



Ked Boards should be used for spinal precautions if needed



# Recommendations

- Ensure the correct type and size of harness is selected for the task
- Examine all phases of work requiring fall protection. If possible, consider engineering measures to prevent falls
- Ensure workers, responders, rescuers and management are properly trained in fall protection measures, rescue procedures and how to treat and recognize suspension trauma

# Before the Fall

- Workers should not work alone in a harness
- Confined spaces attendant must monitor suspended worker continuously
- Rescue plan and training should ensure rescue in 5-minutes
- Select harnesses for the specific application (one type of harness is not designed for all applications)
- If possible, lanyards should be tied off to an anchorage point at waist height or higher

# After a Fall

- Train fall victims to continually move their legs by pushing against a foothold
- Train worker to get their legs as high as possible
- Move suspended worker to a horizontal or sitting position during rescue

NOTE: All workers should be trained that suspension in an upright condition for longer than 5-minutes can be fatal.

# Harness Rescues

- If possible, do not allow fall victims to be suspended in a vertical position
- Rescuers and first aid responders must be trained that workers suspended vertically could result in a fatality
- Post rescue death is possible if fall victims are moved to a horizontal position too rapidly
- Ensure rescuers and first aid providers are aware of the first aid measure to prevent suspension trauma

# References

- Illinois Region VII EMS, Emergency Medical Services, is an alliance of six EMS Systems, which consist of 15 hospitals, 115 fire departments & ambulance services, and nearly 5000 EMS providers. The Region VII EMS website is a collaboration of information, programs, and events for our region. Region VII has prepared an excellent PowerPoint presentation on the recognition, prevention and treatment of Suspension Trauma for EMS responders.
- The U.S. Department of Labor, Occupational Safety and Health Administration has published a Safety and Health Information Bulletin on Suspension Trauma.
- Robertson, David. Orthostatic Intolerance. Vanderbilt University, Nashville, Tennessee.
- Seddon, Paul. Harness Suspension: Review and evaluation of existing information. Health and Safety Executive.
- Weems, Bill and Bishop, Phil. Will Your Safety Harness Kill You? Electronic Library of Construction Occupational Safety & Health (elcosh).