

SUSPENSION TRAUMA

Orthostatic Intolerance

Suspension Trauma

The Medical term is 'Orthostatic Intolerance' or sometimes 'Orthostatic Incompetence'.

Defined as:

An effect which occurs when the human body is held upright vertical position without any movement for a period of time. It presents an immediate threat of death to anyone immobilized in a vertical position (*Hanging motionless in an a harness*).

- The onset and progression of Suspension Trauma can be rapid and is unpredictable.
- If **Not** Properly trained how to Recognize, Manage and Prevent suspension trauma, It can lead to serious injury or death.

EFFECTS

1. Leg circulation

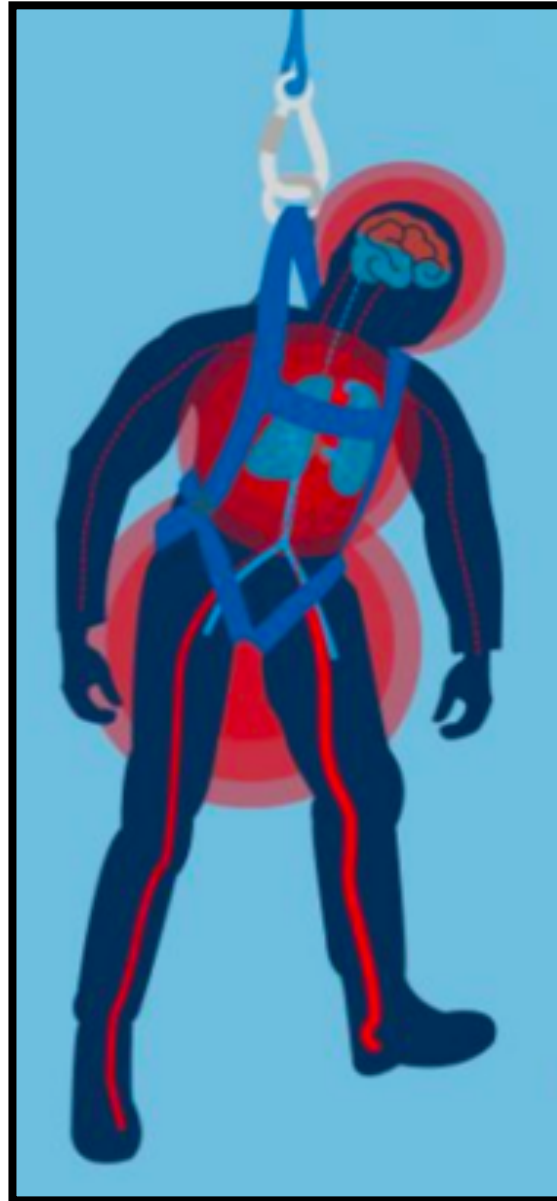
- Straps impede blood return
- Muscle venous pump fails
- Blood becomes highly toxic & highly acidic

2. Heart Circulation

- Anxiety and onset of shock
- Heart rate increases
- Cardiac Irritability – see notes

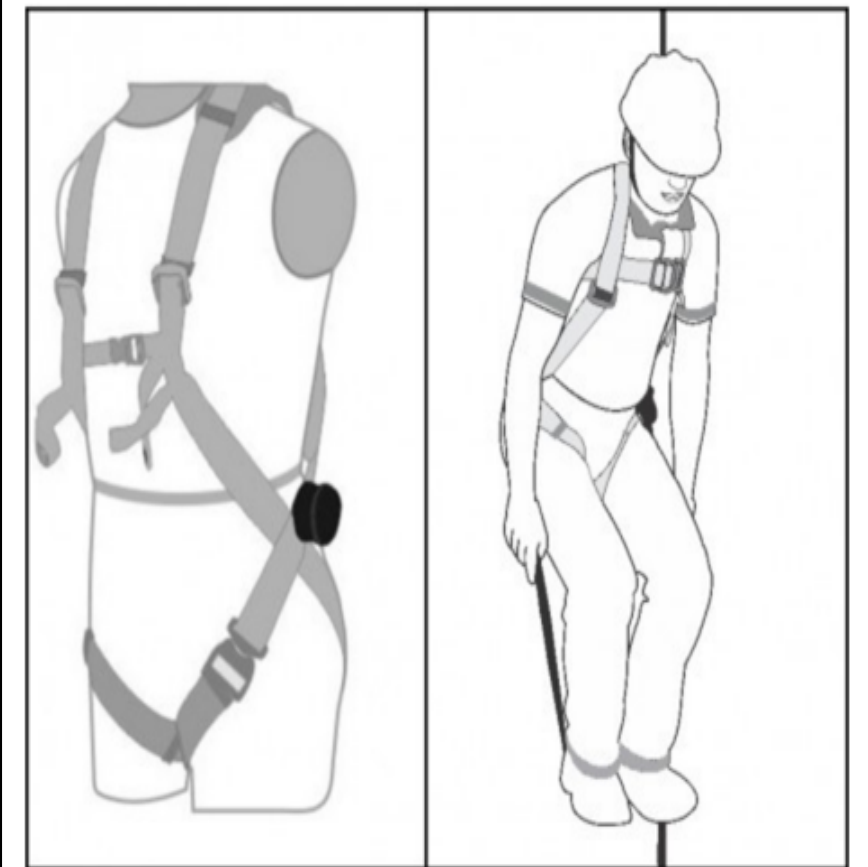
3. Brain Circulation

- Diminished blood flow
- Blocked airway
- Cardiac arrest or brain damage death



Trauma Straps

Fortunately, there is a simple solution to protect against suspension trauma: personal protective equipment known as trauma straps. Trauma straps are a pair of straps, one with hooks in it and the other with loops for the hooks to attach to. They are coiled up in pouches and attached to the fall harness at the hips. When a worker falls and comes to rest, he would uncoil the straps, hook them together, and brace his weight against the straps. This allows the fallen worker to stand up in his fall harness, utilizing his leg muscles, taking weight off of his arteries, and restoring blood circulation until help arrives.



"What Does OSHA say?"



Training

OSHA requires employers to train workers to use fall arrest systems and other personal protective equipment correctly while performing their jobs, in accordance with standards 29 CFR 1910.132 (*Personal Protective Equipment*) 29 CFR 1915.159 (*Personal Fall Arrest Systems*) and 29 CFR 1926.503 (*Training Requirements for Fall Protection*).

Workers who wear fall arrest devices while working, and those who may perform rescue activities, should also be trained in:

- How to ascertain whether their personal protective equipment is properly fitted and worn, so that it performs as intended;
- How orthostatic intolerance/suspension trauma may occur;
- The factors that may increase a worker's risk;
- How to recognize the signs and symptoms identified in this bulletin; and
- The appropriate rescue procedures and methods to diminish risk while suspended.

Rescue Procedures

Under 29 CFR 1926.502 (d) (Fall Protection Systems Criteria and Practices), OSHA requires that employers provide for "prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves." This should include identifying rescue procedures that address the potential for orthostatic intolerance and suspension trauma. Rescue procedures also should address how the rescued worker will be handled to avoid any post-rescue injuries.

Rescue procedures should include the following contingency based actions: suspended worker

- If self-rescue is impossible, or if rescue cannot be performed promptly, the worker should be trained to "pump" his/her legs frequently to activate the muscles and reduce the risk of venous pooling. Footholds can be used to alleviate pressure, delay symptoms, and provide support for "muscle pumping."
- Continuous monitoring of the suspended worker for signs and symptoms of orthostatic intolerance and suspension trauma.
- Ensuring that a worker receives standard trauma resuscitation once rescued.
- If the worker is unconscious, keeping the worker's air passages open and obtain first aid.
- Monitoring the worker after rescue, and ensuring that the worker is evaluated by a health-care professional. The worker should be hospitalized when appropriate. Possible delayed effects, such as kidney failure, which is not unusual in these cases, are difficult to assess on the scene.

"ALWAYS CONDUCT A PRE-JOB BRIEFING. ENSURE THAT YOU HAVE A RESCUE PLAN IN PLACE, KNOW YOUR PROCEDURES."