

What Happens After a Fall is Arrested? Suspension Trauma and the Importance of Having a Rescue Plan

Presented by:

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Background

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1926.503 Training Requirements

1926.503(a)(1)

- The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

Training Requirements Continued

1926.503(a)(2)

- The employer shall ensure that each employee has been trained as necessary, by a competent person who is “qualified”.









Rescue





Harness Hang Syndrome



Instructor

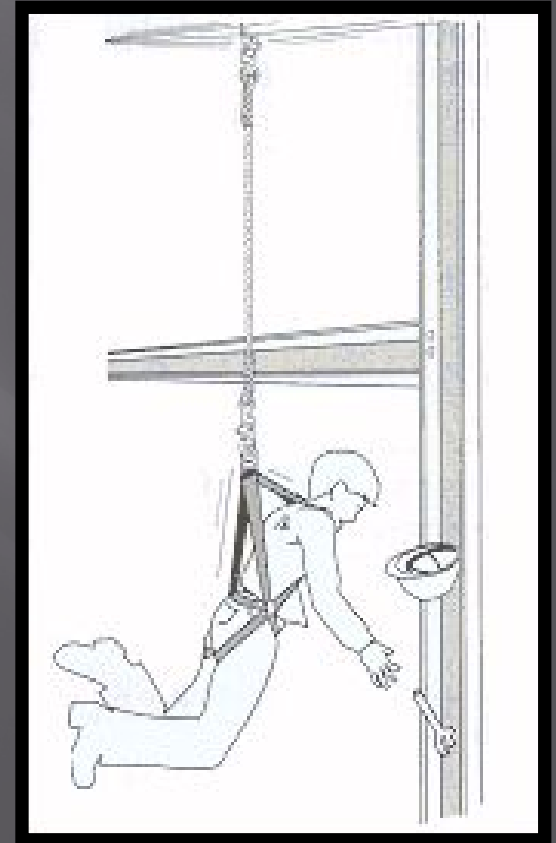
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 - ▣ Captain / Technical Rescue Team Lead
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 - Virginia Department of Fire Programs
 - ▣ Adjunct Instructor Heavy Technical Rescue
 - ▣ Adjunct Instructor / Program Coordinator for Water Rescue
 - Spec Rescue International
 - ▣ Vehicle Rescue, Confined Space, Trench, Rope, Structural Collapse, Water
 - ▣ Industry and Department of Defense Training

Suspension Trauma Defined

- ▣ The rapid loss of consciousness followed by death due to inadequate circulation from motionless vertical suspension.
- ▣ Occurs from:
 - Any type of harness
 - Any type of immobilization device
 - Any other device that restricts the movement of the legs while being suspended below the heart

Aliases (other names)

- ▣ There are several names for the same condition-
 - Orthostatic Intolerance
 - Suspension Trauma
 - Harness Induced Pathology
 - Harness Hang Syndrome

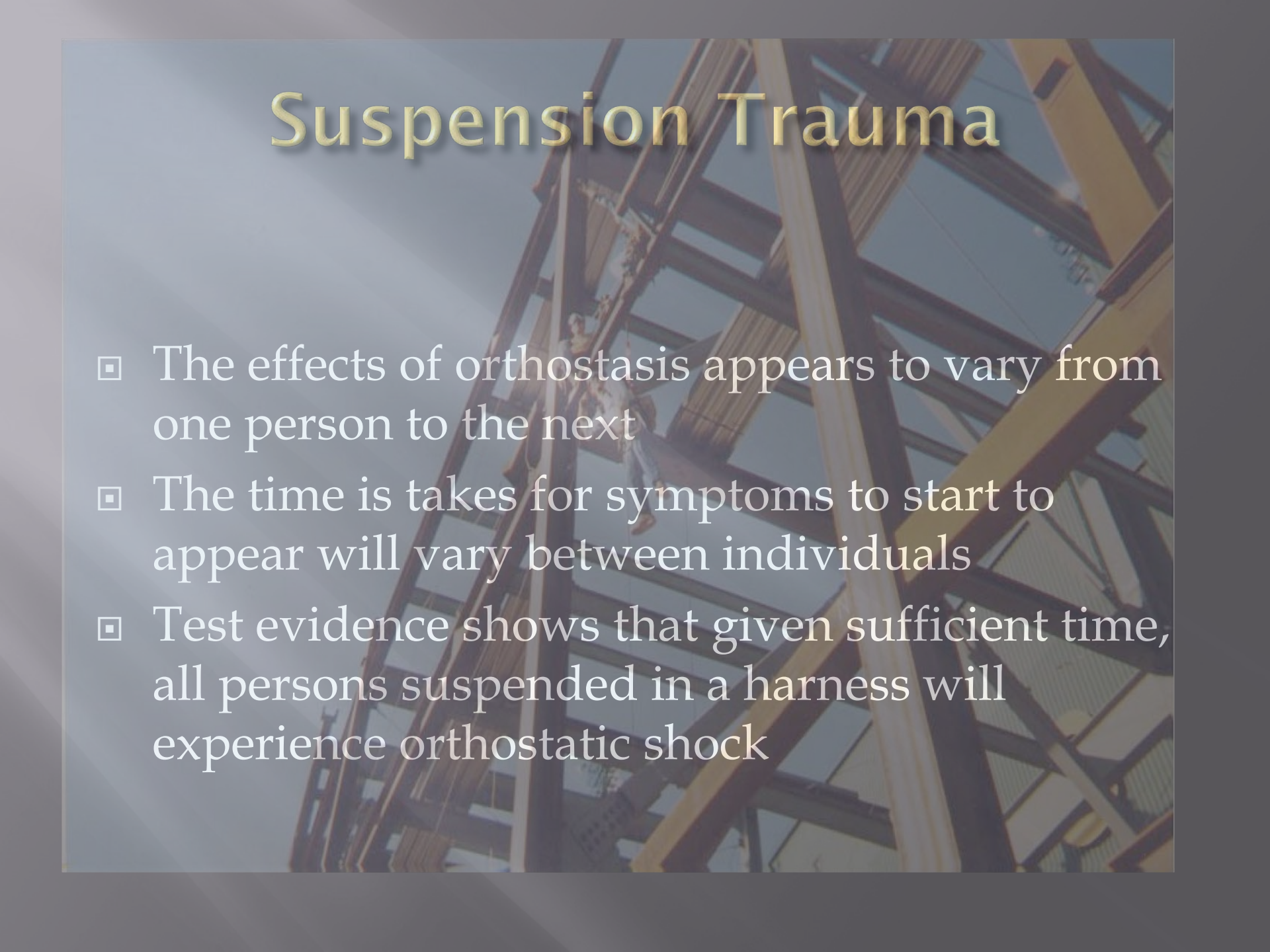


Orthostatic Intolerance

- ▣ Standing upright with no movement of the legs
- ▣ This position produces venous pooling of blood in the legs due to gravity
- ▣ Sometimes called Parade Ground Fainting



Suspension Trauma



- ▣ The effects of orthostasis appears to vary from one person to the next
- ▣ The time it takes for symptoms to start to appear will vary between individuals
- ▣ Test evidence shows that given sufficient time, all persons suspended in a harness will experience orthostatic shock

What Causes Orthostatic Intolerance ?

- ▣ Standing without moving your legs
- ▣ Motionless suspension in a harness
- ▣ Having the body vertical with circulation compromised

Signs and Symptoms of HHS



Signs and Symptoms

- ▣ Warning Signs
- ▣ Faintness
- ▣ Sweating
- ▣ Paleness
- ▣ Hot Flashes
- ▣ Increased Heart Rate
- ▣ Nausea
- ▣ Late Warning Signs
- ▣ Dizziness
- ▣ Unusually Slow Heart Rate
- ▣ Unusually Low Blood Pressure
- ▣ Greying or Loss of Vision

Additional Risk Factors

- ▣ Inability to move legs
- ▣ Pain
- ▣ Injuries during fall
- ▣ Fatigue
- ▣ Dehydration
- ▣ Hypothermia
- ▣ Shock
- ▣ Cardiovascular Disease
- ▣ Respiratory Disease
- ▣ Blood Loss



How Long Until Its an Emergency

- ▣ 5 – 30 MINUTES!!
- ▣ Unconsciousness can occur in under ONE Minute if conditions exist to exacerbate the lost blood flow to the brain. (OSHA)

What Can You Do?

- ▣ If a person is working in a harness environment the employer should have the ability to lower a victim. (Per OSHA requirements)
- ▣ If unable to lower the victim, or the working environment does not allow, then Suspension Trauma Relief system should deploy, even if the worker is unconscious. (OSHA)

Rescue Efforts

- ▣ Some movement of the legs is good. Over exertion will lead to quicker fatigue and a possible worsening of the situation.
- ▣ Avoid pedaling, the excessive movements by the victim if possible.
- ▣ imaginary bike!
- ▣ While the bike exercise is effective often times the victim faints if pedaling stops. (HSE)

Rescue Efforts

- Lower the victim as safely as possible.
- If no additional trauma associated with the fall treat as a normal syncope pt.
- DO NOT SIT UPRIGHT!!
- The brain and heart need blood flow back!
- NS bolus for possible Kidney Complications.
- Transport to facility with suspension times documented to best of your abilities. (HSE)

Rescue and Prevention of HHS

- ▣ Be a cheerleader for conscious victims
- ▣ Provide a standing surface if possible
- ▣ Get them to a solid surface as soon as possible
- ▣ Treatment
 - Apply high flow oxygen
 - Keep leg straps tight
 - Transport promptly

What did we learn?

- ▣ Hanging motionless in a harness is a dire medical emergency
- ▣ Any harness can cause HHS
- ▣ The persons physical condition plays a role in the time of onset



What can still happen if....

- ▣ Death may be caused by unusual levels of toxins in the blood returning to the heart
- ▣ Death can occur during or just after rescue



References

- ▣ OSHA, *Suspension Trauma/Orthostatic Intolerance*. Washington D.C.: , 2004. Web. <<http://www.osha.gov/dts/shib/shib032404.html>>.
- ▣ Seddon, Paul. *Harness Suspension: review and evaluation of existing information*. Health and Safety Executive. Research Report 451/2002. 104 pp.
- ▣ HSE, Health and Safety Executive. United Kingdom. *First aid management for harness suspension when working at height*. 2012. Web. <<http://www.hse.gov.uk/falls/harness.htm>>.

Solutions

1926.502(d)(19)

- Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

1926.502(d)(20)

- The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.

1926.502(d)(21)

- Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service

Overview of Available Solutions



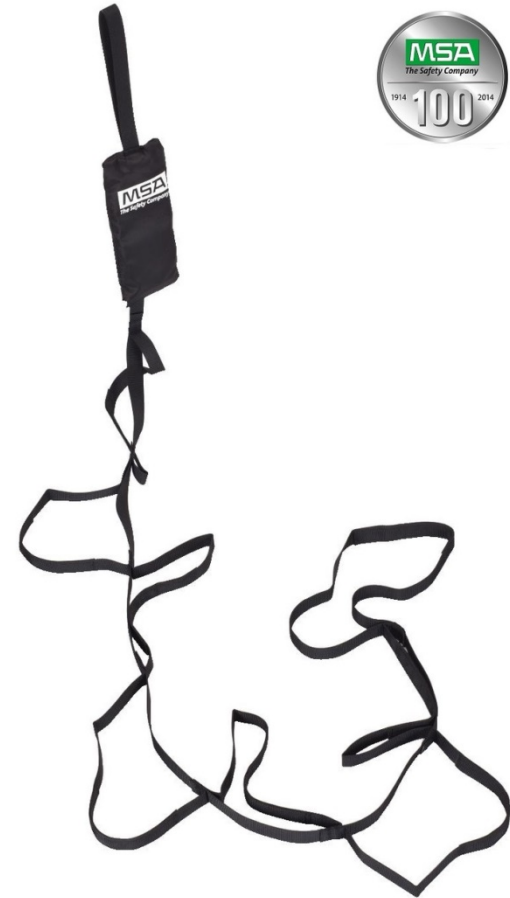
Miller Relief Steps

Overview of Available Solutions



**DBI Sala, Guardian and MSA
Relief Steps**

Overview of Available Solutions



Rescue Ladders



3M DBI-SALA 8516294
8' Synthetic Web Rescue
Ladder with Reinforced Rigid
Staggered Steps, Yellow

Overview of Available Solutions



French Creek Fall Protection

Overview of Available Solutions



PRD—DBI SALA



Training Requirements 1926.503 (C) Retraining

When an employer has reason to believe that any effected employee who has already been trained does not have the understanding and skill required by paragraph (a) or (b) of this section, The employer shall retrain such employee.

Circumstances where the provision requires retraining include, but are not limited to the following situations:

- 1) Changes in the workplace rendering previous training obsolete; or
- 2) Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or
- 3) Inadequacies in an affected employee's knowledge or use of fall protection systems equipment indicate that the employee has not retained the requisite understanding or skill.

For questions related to today's presentation,
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QUESTIONS?