Approximate Lesson Time

1 Hour

Fall Prevention: Module 3

Personal Fall Protection Systems

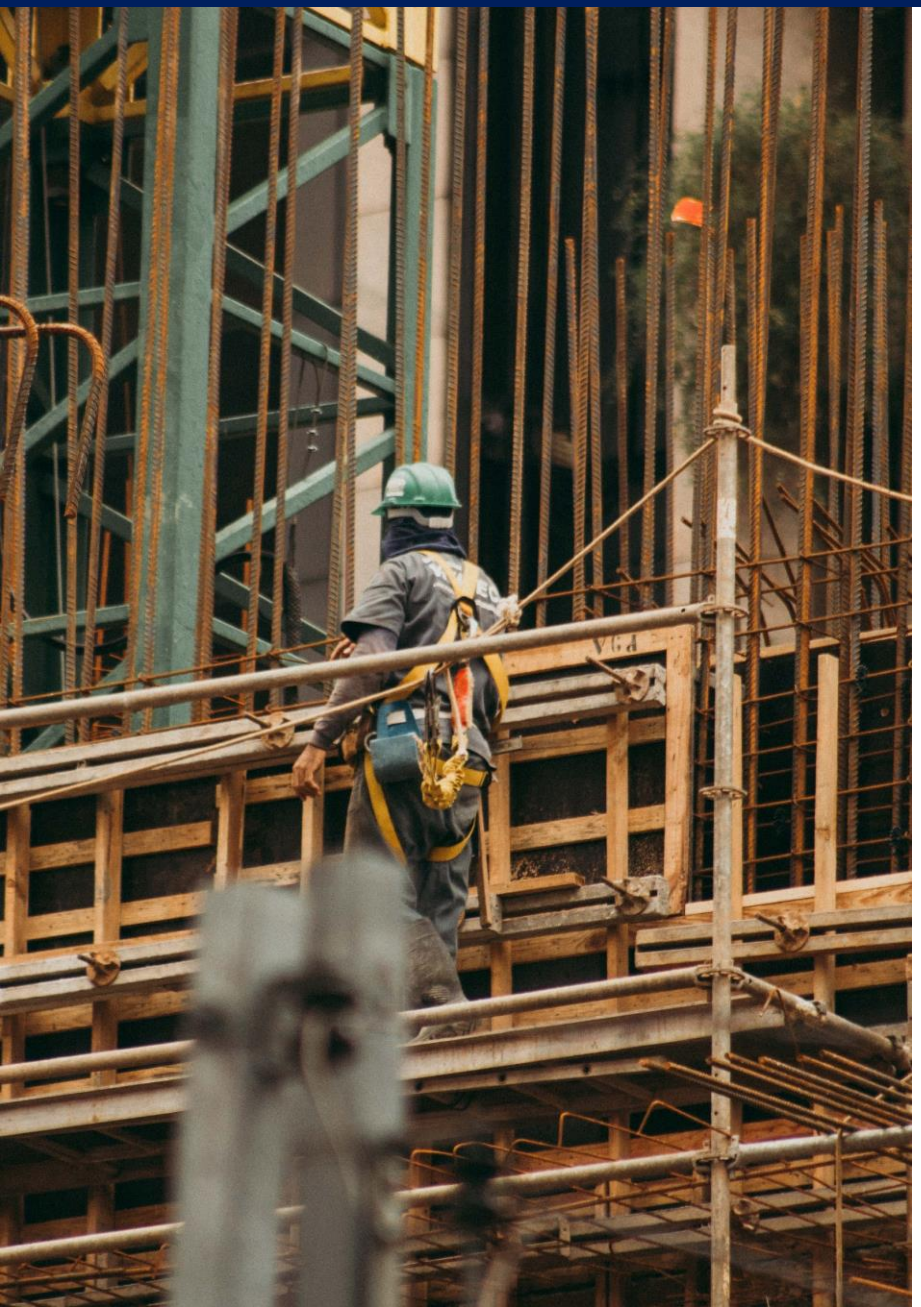
START MODULE

on the agenda

- Introduction
- When does a fall protection system need to be used?
- Are there different types of fall protection systems?
- What is my role/my employer’s role?
- What are the parts of the equipment?
- How do I inspect the equipment before use?
- How do I use my fall protection equipment?

VIDEO
PLACEHOLDE

What went wrong?



The worker….

1. did not inspect his equipment before starting the job.
2. should know what to look for when inspecting the equipment like damage.
3. did not tie-off on a structural member but on the actual scaffold itself.
4. should have talked to someone if he was unsure about safety.

What went wrong?

The employer….

1. Did not assign equipment for each worker.
2. Did not do a routine inspection of the fall safety equipment for any damage.
3. Did not evaluate the material being used for the lanyards
4. Did not make sure that their workers knew how to inspect their own equipment.

What should have happened?

Recommendation #1 | Recommendation#2 | Recommendation #3

Fall-arresting devices should be periodically inspected for damage by a qualified person, and faulty equipment should be immediately removed from service. Workers who wear fall protection should inspect their own equipment before the start of each job.

If the equipment was individually assigned, the damaged equipment may have been seen more easily.

What should have happened?

Recommendation#1 | Recommendation #2 | Recommendation #3

Personal protective equipment should be able to withstand the harshest conditions that it may be exposed to on any given job.

In this case, the lanyard was made of nylon which is vulnerable to extreme heat from welding or cutting. A better material for lanyards would have been steel mesh or wire core lanyards.

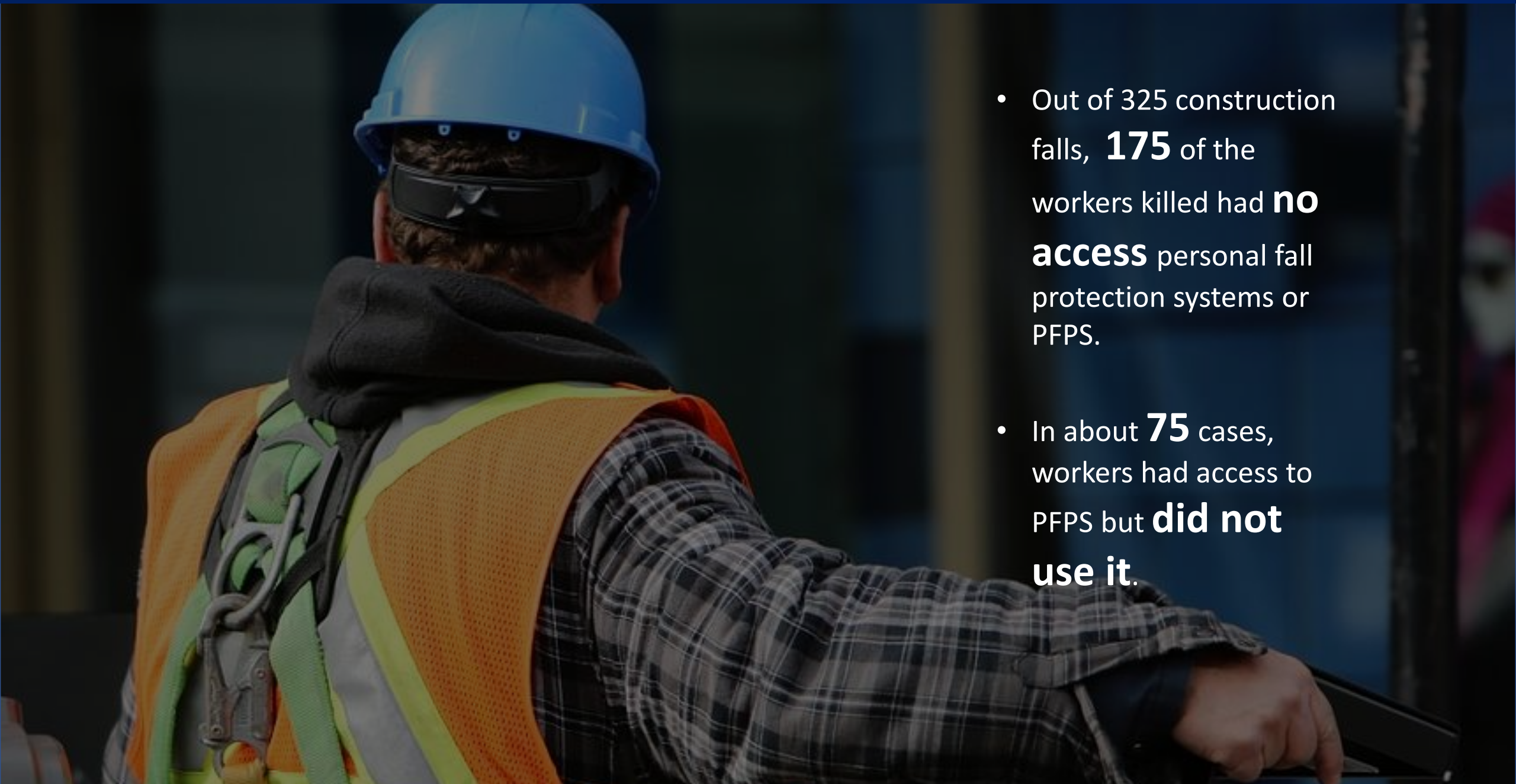
What should have happened?

Recommendation#1 | Recommendation #2 | **Recommendation #3**

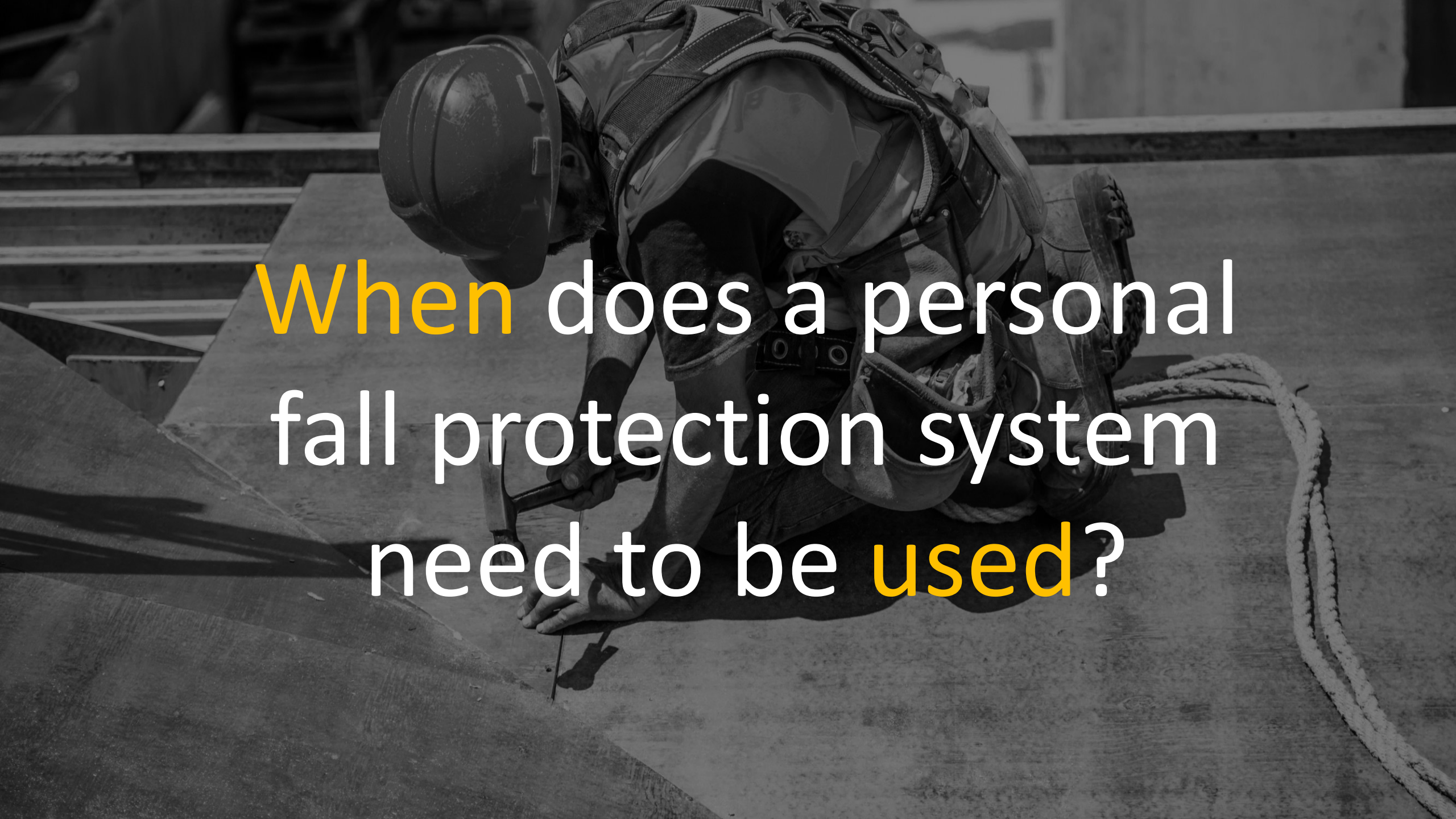
OSHA requires that workers working from scaffolds suspended from overhead supports be protected by an approved safety lifebelt, lanyard, and lifeline secured above the point of operation to an anchor point or structural member.

The possibility of a two-point suspension system should be looked into. If a lifeline and a lanyard, each anchored at different points on the structure were hooked to the body harness that if a lanyard broke (as in this instance), the lifeline would still support the worker. If this was in place, the death might have been prevented.

What will this module cover?



- Out of 325 construction falls, **175** of the workers killed had **no access** personal fall protection systems or PFPS.
- In about **75** cases, workers had access to PFPS but **did not use it**.

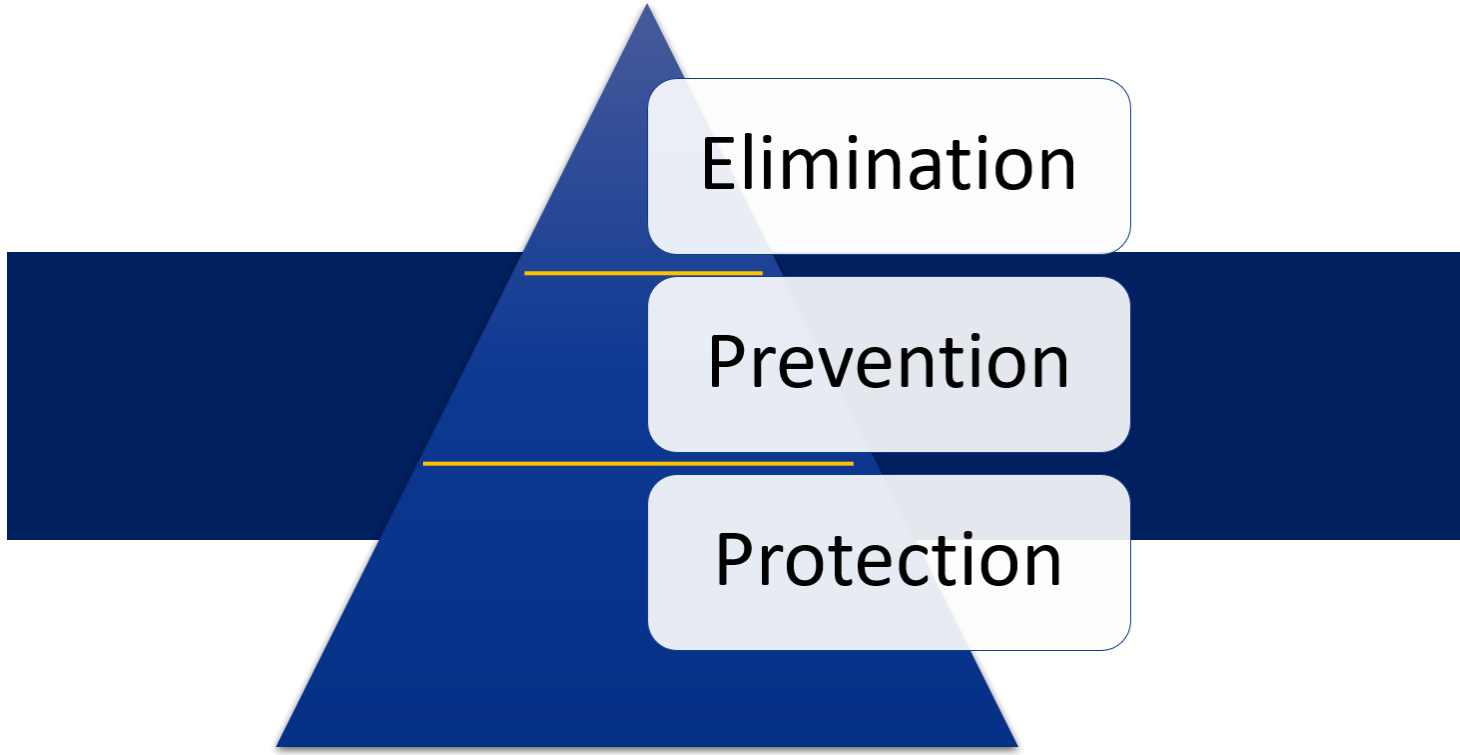

When does a personal fall protection system need to be used?

6 Feet Rule

- When working at 6 feet or higher, put on your personal fall protection system!

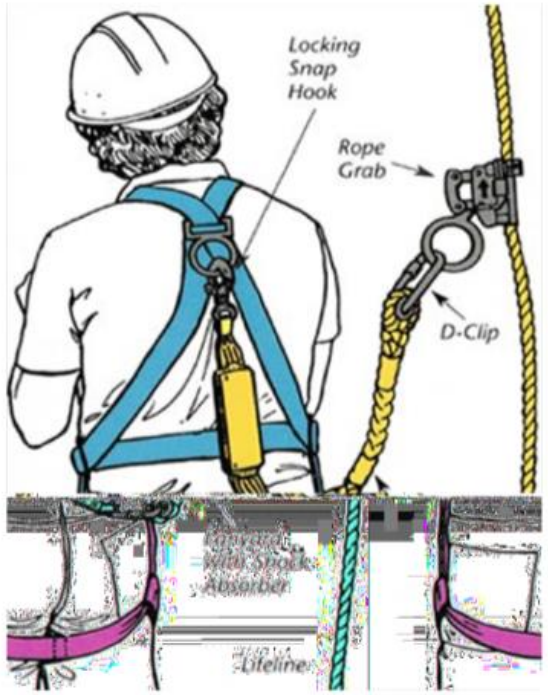
Protection – Hazard Control Type

- Last line of defense
- Fall is already happening
- Only protects yourself and not others



Personal Fall Arrest System

- Arrest means “STOP”
- The parts of the system are:
  - A – anchorage
  - B – body harness
  - C - components



Parts of a typical harness with Personal Fall Arrest System

Anchorage

Body Harness

Components

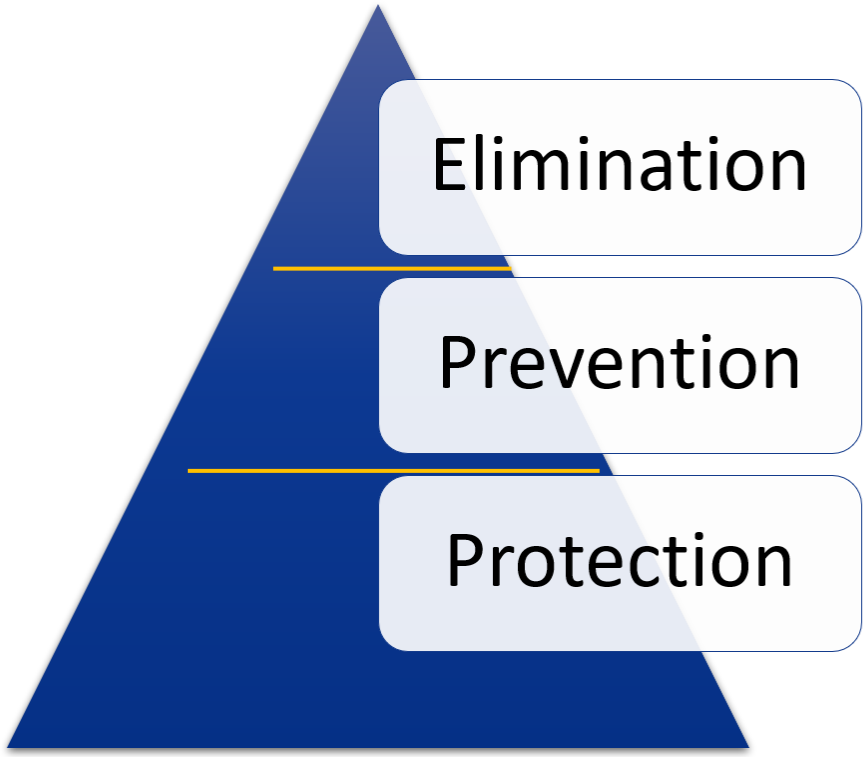
When should you start thinking about putting on a personal fall arrest system?

- As soon as I get to work.
- As soon as I see that I’m working above 6 feet.
- As soon as I see that I’m working above 10 feet.

Submit

What type of hazard control is a PFAS?

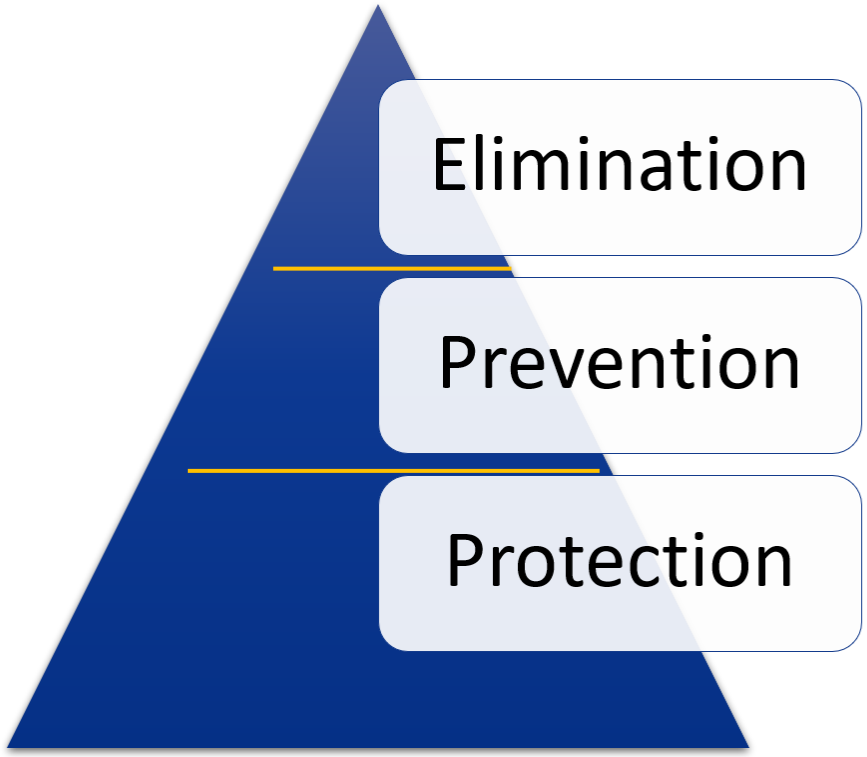
- Elimination
- Prevention
- Protection



Submit

Why? *Select all that apply.*

- [x] Because it only protects myself.
- [x] Because it gets used only when someone is already falling.
- [ ] Because it prevents someone from falling.
- [ ] Because it takes away the danger completely.



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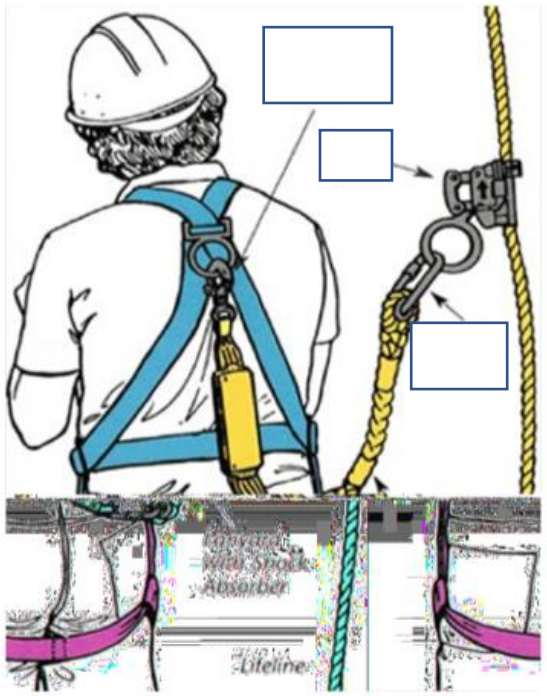
Drag and drop the label to the correct parts of a personal fall arrest system



Parts of a typical harness with Personal Fall Arrest System

Anchorage

Body Harness

Components

Submit


Are there different
types of Fall
Protection Systems?

Fall Systems Described

Fall Arrest Systems

Fall Arrest Systems stops the worker from hitting the level below. It is made up of the anchorage, body harness, and components. Common equipment with this system are lanyards, lifelines, or deceleration device.

LEARN MORE

Positioning Systems

Positioning Systems are used along with a fall arrest system! It uses the same equipment but instead of catching a worker's fall, it is used only for positioning to do work on a vertical surface like a wall or post.

LEARN MORE

Fall Restraint Systems

The main difference in a **Fall Restraint System** is the anchor point is far enough back so the worker wearing the harness cannot reach the fall hazard at all. It uses the same equipment. This is a prevention type of hazard control.

LEARN MORE

Match the fall system with the correct picture.

A.

B.

C.

A. Fall Arrest System

B. Positioning System

C. Fall Restraint System

Submit

True OR False…
Positioning device systems is enough to stop a fall.

- True.
- False.

Submit

True OR False…
Fall Restraint systems falls under Prevention control because it prevents a fall from happening in the first place. But it doesn't allow for much movement when working.

- True.
- False.

Submit

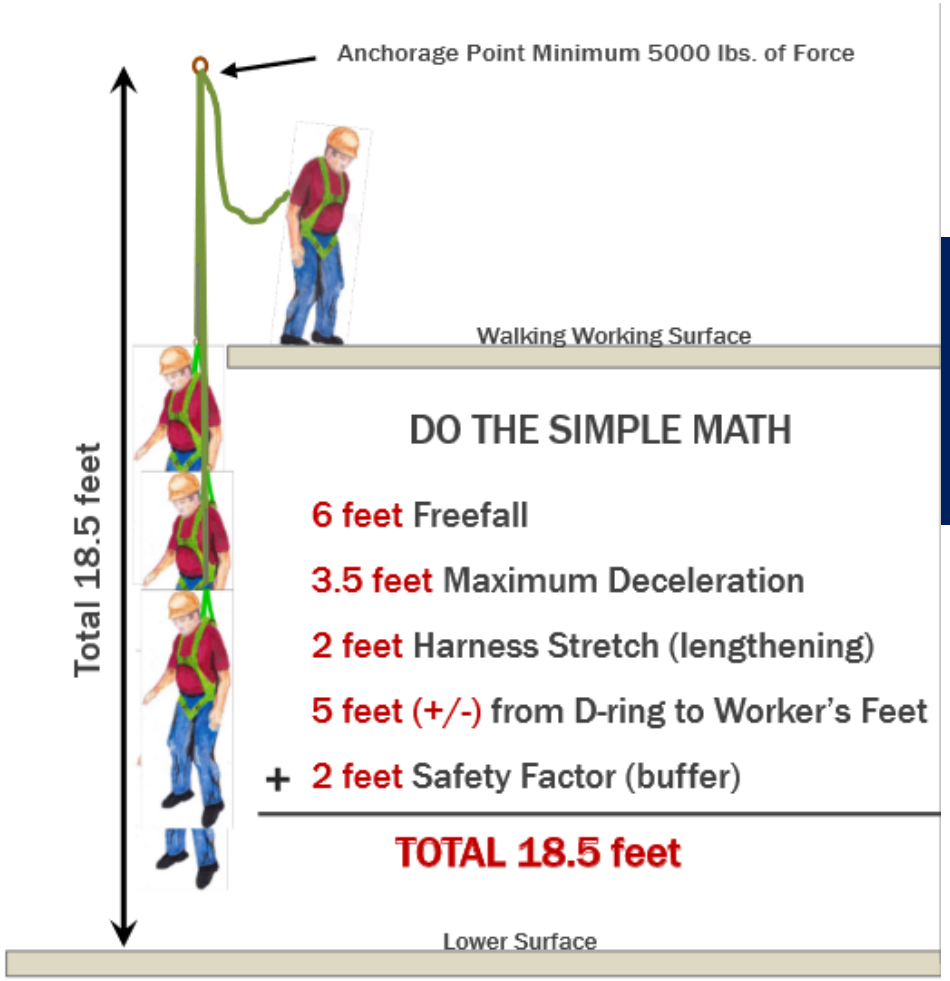

What is my role/my employer's role?

Employer's Role

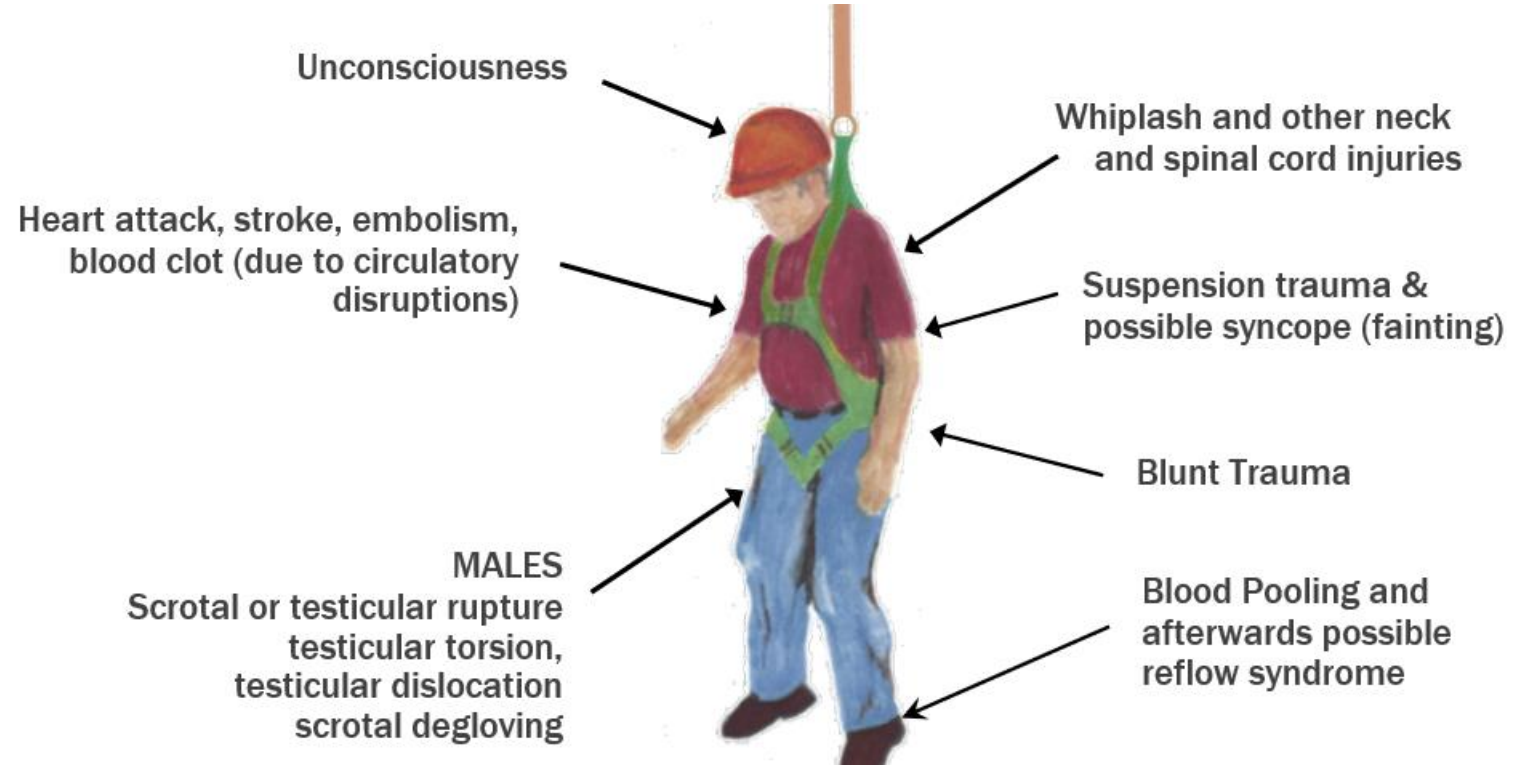
1. Figure out the fall hazards based on the scope and task at hand workers will run into.
2. Buy ALL necessary fall protection equipment.
3. Evaluate all parts of a fall protection system and anchorage devices used on the job site before they are used to protect employees.
4. Train workers in the proper use & inspection of ALL fall protection equipment based upon careful review of manufacturer's instructions and warnings. Make sure that the training was effective in the job site.
5. Have equipment designed, implemented, tested and reviewed by a qualified and/or competent person on as stated in the regulation.

Total Fall Distance

- The minimum vertical distance between the worker and the lower level so that in case of a fall, the worker does not make contact with it.
- Must be calculated before workers have to use a PFAS!



Fall Rescue Plan



Worker's Role

Decide to put on your safety equipment at all times. 1

Understand the equipment enough to know when something is not right or normal. 2

Inspect all parts of your equipment before putting it on. 3

Know who the competent person is on your job site. 4

Don't be afraid to ask questions. Stop work if needed (311). It is your life on the line. 5

Drag the responsibility and drop it to the person that it belongs to.

Contact 311 if needed.	Decide to put on a PFAS.	Inspect the equipment.	Buy the fall equipment.	Figure out any fall hazards.	Have a fall rescue plan.

Worker

Employer

Submit

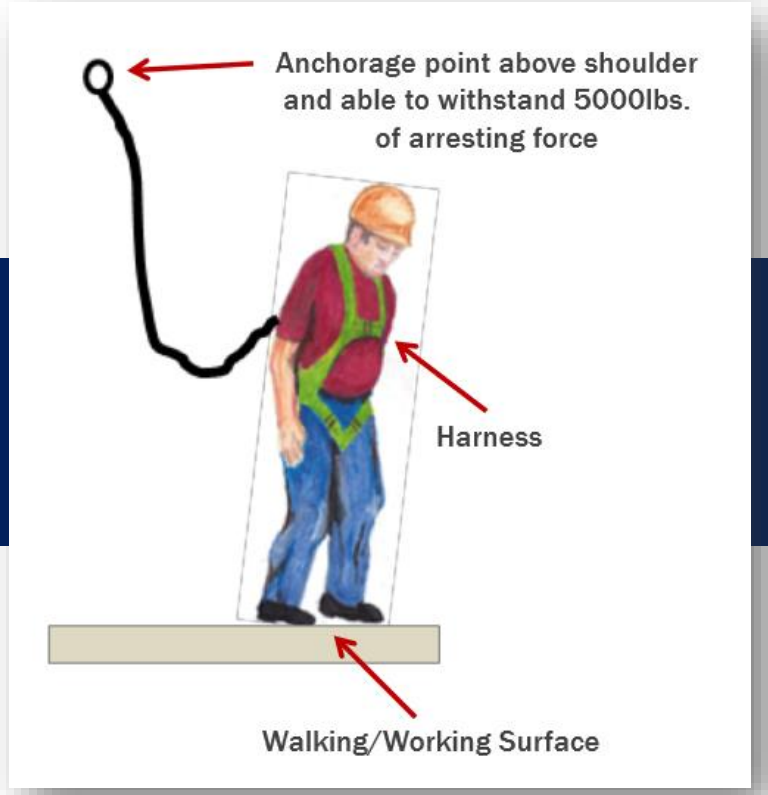

What are the parts of a PFPS?

Anchorage

- Be able to support at least 5000 pounds of weight
- Must be able to support two times the amount of impact load when a worker falls 6 feet
- Approved for use by a Qualified Person

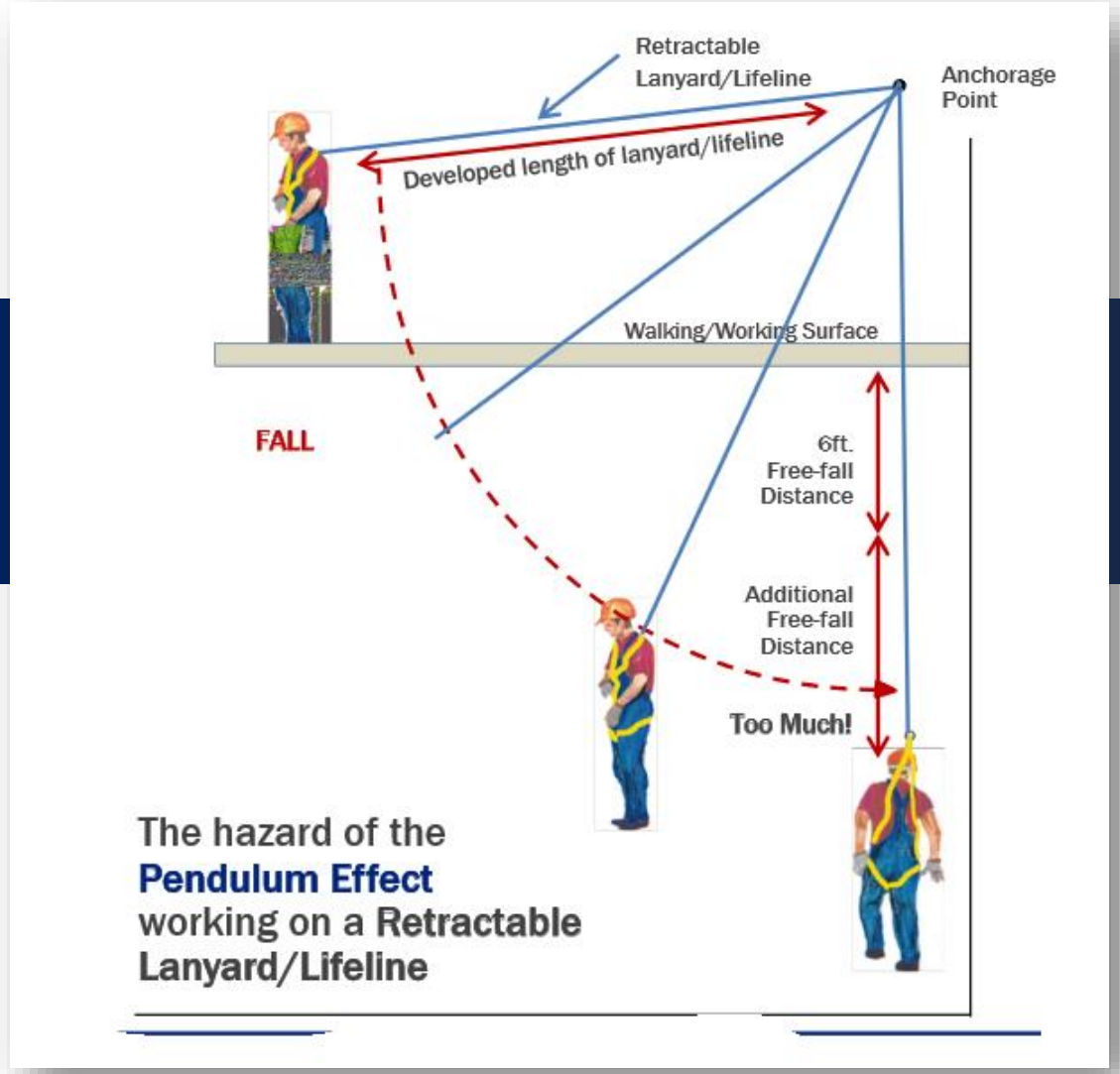
Anchorage - continued

- Anchorage points should not be used to support other things like platforms
- Anchorage should be directly above the worker to prevent a worker from swinging after a fall



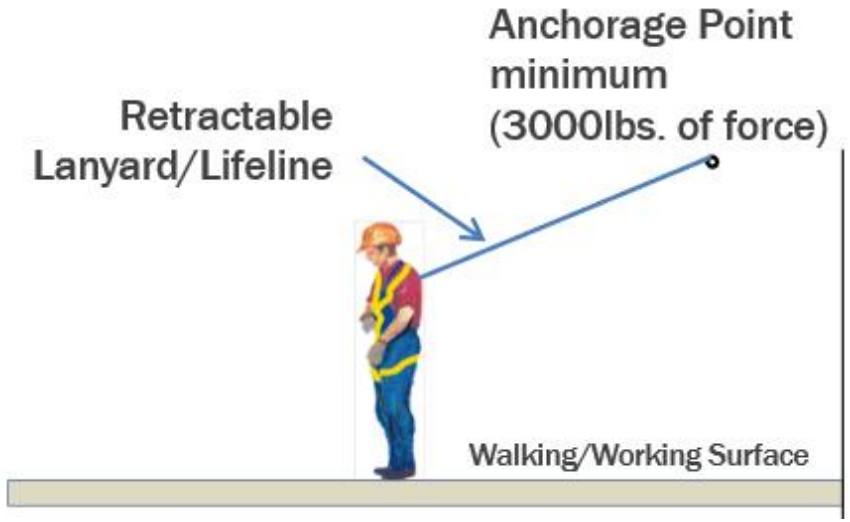
Swing Fall

- Happens when using a retractable lanyard
- Happens when the anchorage point is not directly overhead of the worker



True OR False…
It’s okay if my anchor is not right above my head.

- True.
- False.



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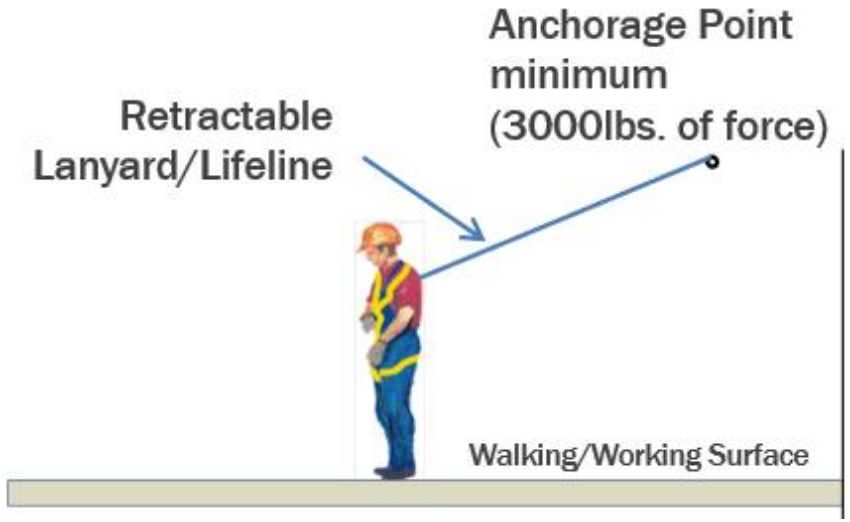
What can happen if the anchor point is not directly above the head?

- Nothing will happen.
- I won’t be able to walk around much.
- A swinging fall or pendulum effect.
- A straight drop fall.



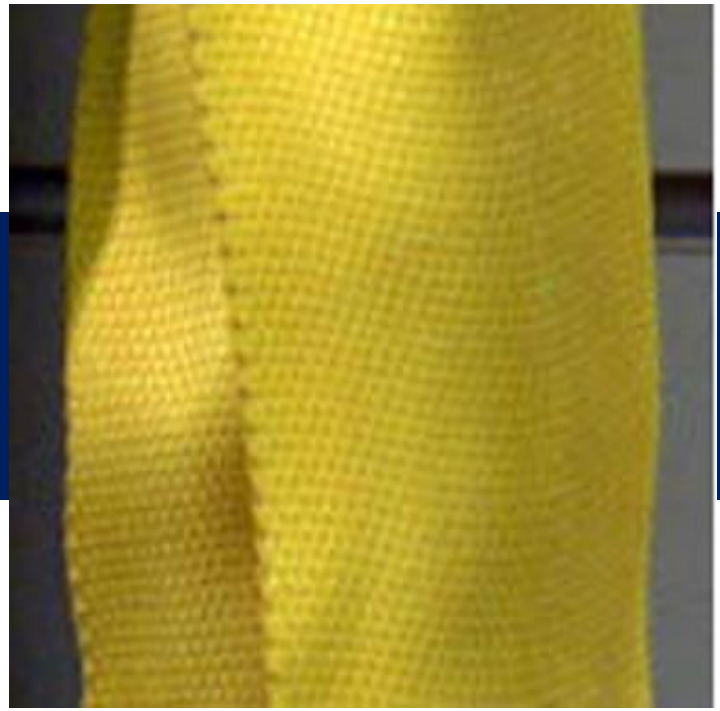
Submit

Body Harness

- Designed to lessen injury and stress on the body during a fall
- Allows better movement for the worker

Body Harness

- Must be able to support two times the amount of impact load when a worker falls
- Webbing material must be made by synthetic fibers



Body Belt

- DO NOT use as part of a personal arrest system
- Okay to use ONLY as a positioning device when working with walls or posts

True OR False…
OSHA does not recommend using body belts instead of a body harness.

- True.
- False.

Submit

Components

- Includes connectors like snaphooks or D-rings, connection points, lanyards, deceleration devices, lifelines
- Connectors
  - Snaphooks
  - D-rings
- must be made from steel, is rust-free with smooth surfaces and edges

Choose which parts fall under the category: Components? *Select all that apply.*

- [ ] Anchorage
- [x] Connectors (snaphooks, D-rings)
- [x] Lanyards
- [x] Lifelines
- [x] Connection points
- [x] Deceleration devices
- [ ] Body harness

Submit

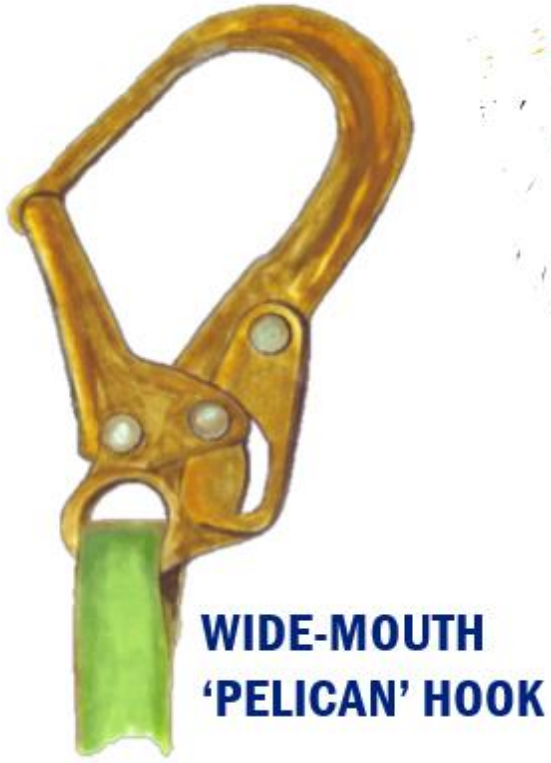
Components – connectors

- Snaphooks must be the locking type
- Must be designed to prevent separation from any part of the PFAS
- Support 5,000 pounds

Components – connectors

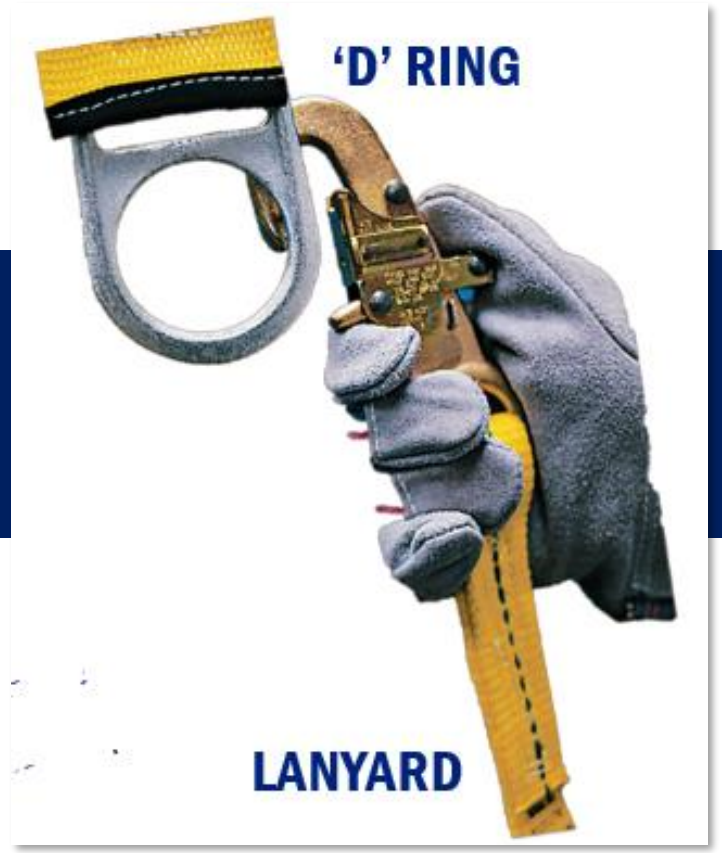
- Unless it is designed for it, DO NOT connect snaphooks:
  - Directly to webbing, rope, or wire
  - To each other
  - To a D-ring to which another snaphook or other connector is attached
  - To a horizontal lifeline
  - To any object which would make the snaphook release itself

- It is never okay to hook up to a guardrail!



Components – connectors

- Support 5,000 pounds
- Tested without cracking, breaking, becoming deformed



Unless a locking snaphook is designed for it, DO NOT hook up to: *Select all that apply.*

- Directly to a rope, wire, or webbing
- To each other
- To a D-ring with another connector attached
- To a Horizontal lifeline
- Any object that would make the snaphook release itself

Submit

True OR False…
It is okay to hook onto guardrails.

- True.
- False.

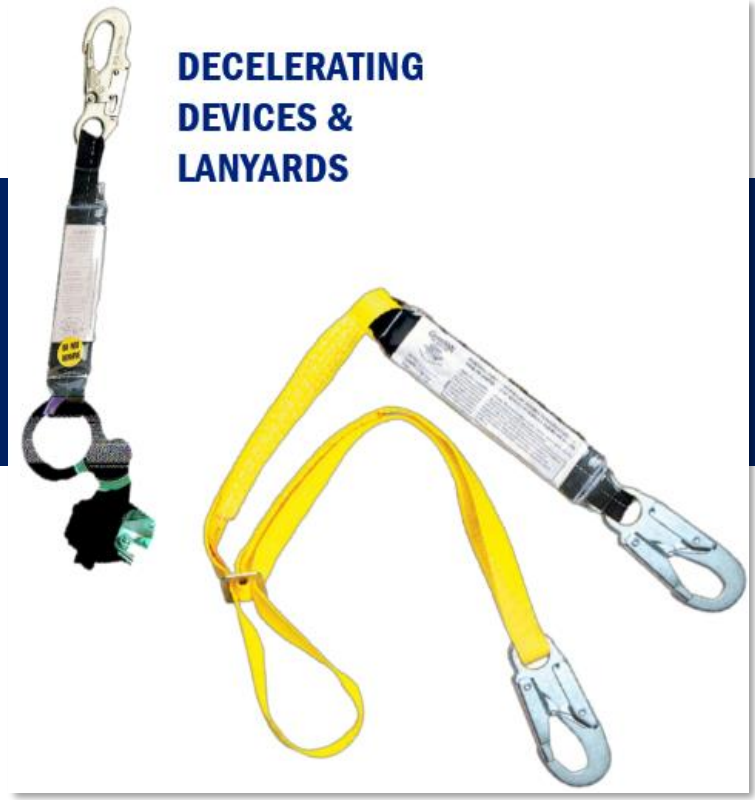
Submit

Components – lanyards

- A flexible rope or strap that has a connector at each end for connecting the body harness to an anchorage, lifeline, or deceleration device.
- Deceleration device types:
  - Self-retracting lanyard
  - Shock-absorbing lanyard
  - Rip-stitch lanyard

Components – lanyards

- Deceleration devices scatter energy during a fall to limit the stress and injury on the body.
- Self-retracting lanyards offer more movement for the worker but always locks at a point to maintain tension.
- Limit free fall to 2 feet, support 3,000 pounds.
- If more than 2 feet, support 5,000 pounds. This is called the deceleration distance.



Components – lanyards

- In a shock-absorbing lanyard the webbing stretches. This is what catches the worker's falling weight.

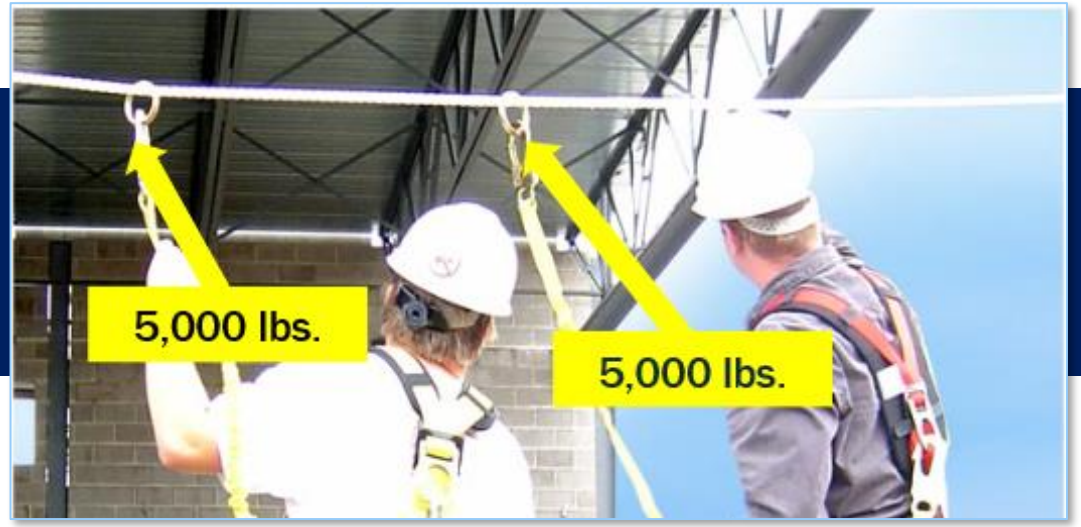
- A rip-stitch lanyard has extra webbing that rips slowly as a worker falls.

Components – lifelines

- Lifelines allow workers to move up and down or back and forth across an area.
- A rope grab or shuttle lets it slide through the rope. It connects to the line while the lanyard connects to the worker.
- 2 types
  - Horizontal lifeline
  - Vertical lifeline

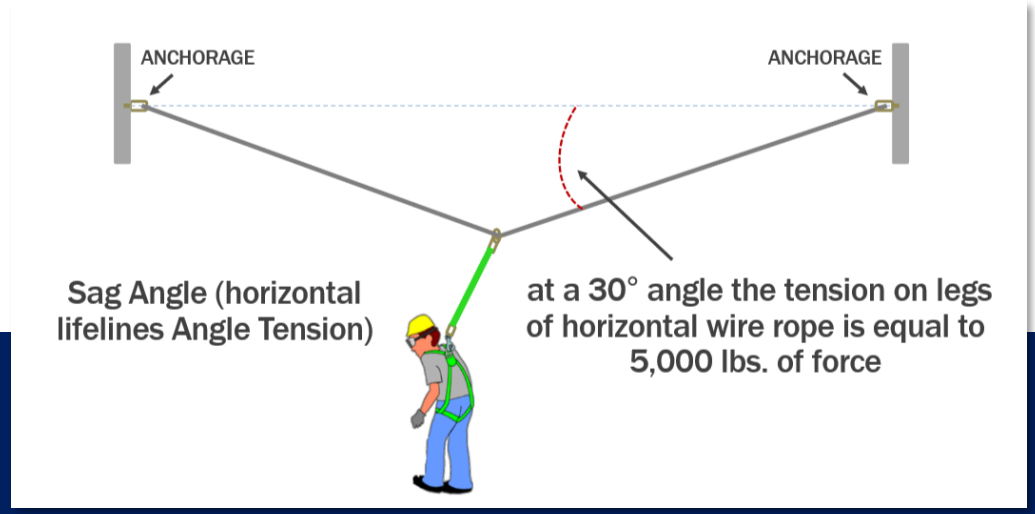
Components – lifelines

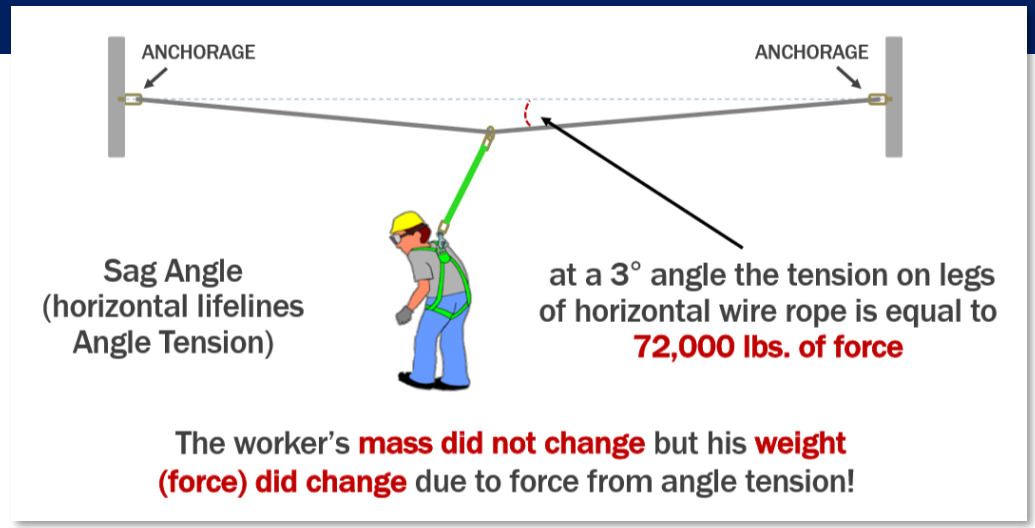
- Horizontal lifelines must be designed, installed, and used by a qualified person.
- On a suspended scaffold, the connectors must be capable of locking both horizontal and vertical.
- When more than one person is tied to the lifeline, all workers are affected when someone falls.
- It presents more danger because of the “sag angle”.



Components – lifelines

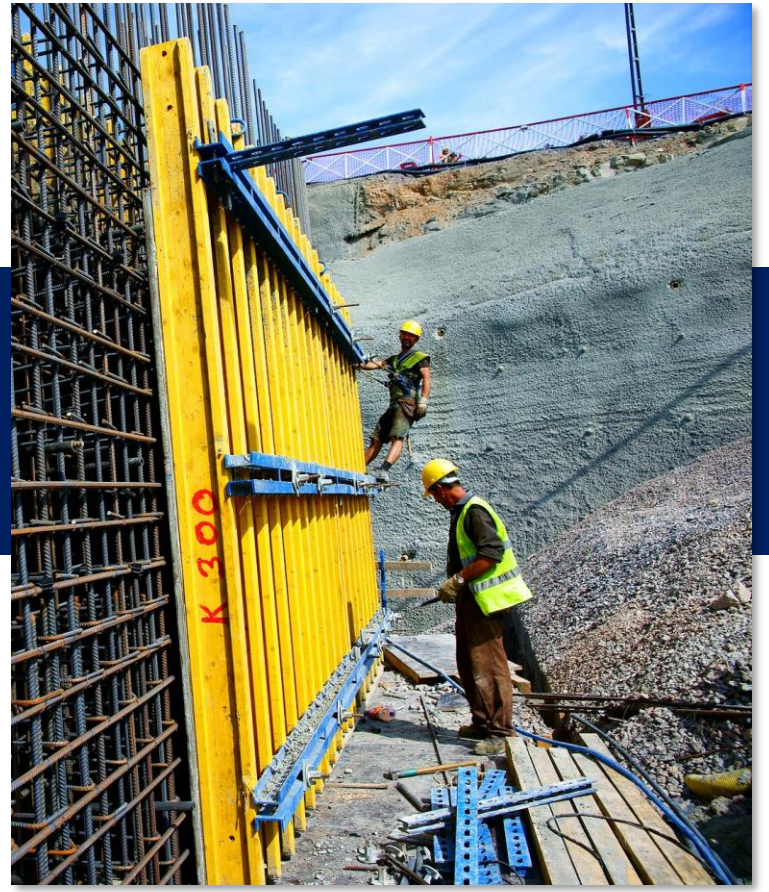
- The more the line sags the less the force is to the worker.
- The tighter the line, the more force the worker will feel.





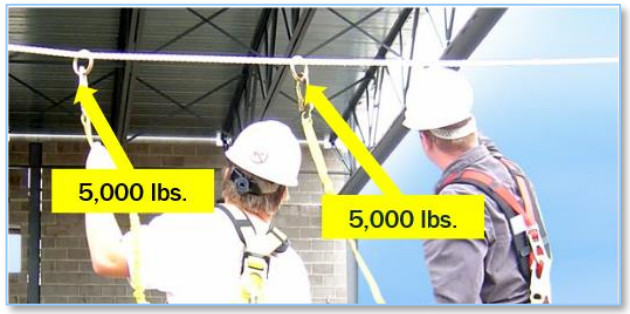
Components – lifelines

- Vertical lifelines connects on one end to hang vertically.
- Strength of 5,000 pounds.
- Should be protected from being cut or scraped.
- Each worker must have their own line.



Match the lifeline type with the correct picture.

A.



B.

A. Horizontal lifeline

B. Vertical lifeline

Submit

Click on the rope grab in this picture.

Submit


How do I inspect the equipment before use?

Inspecting PFPS

1. Pick up the harness by its D-ring in the back.

Inspecting PFPS

2. Gently shake the harness to let the straps fall into place.

Inspecting PFPS

3. Make sure the buckles are unfastened.

Inspecting PFPS

4. Look for any damage like worn, frayed, or missing threads, cracked webbing or foreign material on the harness.

Inspecting PFPS

5. Check the metal strap fasteners and D-ring to make sure they aren’t cracked or deformed.

Inspecting PFPS

6. If the harness uses grommets, make sure they are firmly attached and are not deformed or damaged.

Inspecting PFPS

7. Make sure buckle tongues are firmly attached and not bent.

Inspecting PFPS

8. Inspect harness and lanyard for signs of activation. Most model harnesses and synthetic lanyards will have tear away stitching to show the operator if the equipment had been in a fall. If it has been activated or have been in a fall, DO NOT USE IT!

Inspecting PFPS Summary

Pick up the harness by its D-ring in the back. 1

Gently shake the harness to let the straps fall into place. 2

Make sure the buckles are unfastened. 3

Look for any damage such as worn, frayed, or missing threads, cracked webbing, or foreign material on the harness. 4

Inspecting PFAS
Summary - continued

Check the metal strap fasteners and D-ring to make sure they aren't cracked or deformed. 5

If your harness uses grommets, make sure they are firmly attached and are not deformed or damaged. 6

Make sure buckle tongues are firmly attached and not bent. 7

Inspect harness and lanyard for signs of activation (most model harnesses and synthetic lanyards will have tear away stitching to show the operator if the equipment had been in a fall). If it has been activated or been in a fall, DO NOT USE! 8


How do I use my fall protection equipment?

Using my fall protection equipment

1. After inspecting your equipment, attach the lanyard to the harness.

Using my fall protection equipment

2. Slip the harness over your shoulders like a vest.

Using my fall protection equipment

3. Make sure the D-ring is in the middle of your back, directly between the shoulder blades.

Using my fall protection equipment

4. Pull each leg strap up and fasten the buckles together.

Using my fall protection equipment

5. Stand up straight and adjust the length of the side body straps as needed to make sure there is NO slack.

Using my fall protection equipment

6. Fasten the chest strap about mid-chest high.

Using my fall protection equipment

7. Adjust the chest strap as necessary to remove any slack.

Using my fall protection equipment

8. Make sure the shoulder straps and leg straps are snug, while still allowing full range of motion.

Using my fall protection equipment

9. Eliminate any excess slack by tightening the straps in the buckle.

Using my fall protection equipment

10. Make sure the loose ends of the straps are tucked into the strap retainers.

Using my fall protection equipment

11. With your hand held flat, you should be able to fit your fingers underneath your leg straps.

Using my fall protection equipment

12. Hook your lanyard to the anchor point.

Using a Harness Summary

Step 1

After inspecting your equipment, attach the lanyard to the harness.

Step 2

Slip the harness over your shoulders like a vest.

Step 3

Make sure the D-ring is in the middle of your back, directly between your shoulder blades.

Step 4

Pull each leg strap up and fasten the buckles together.

Step 5

Stand up straight and adjust the length of the side body straps as needed to make sure there is no slack.

Step 6

Fasten the chest strap about mid-chest high.

Using a Harness Summary

Adjust the chest strap as necessary to remove any slack. Step 7

Make sure the shoulder straps and leg straps are snug, while still allowing full range of motion. Step 8

Eliminate any excess slack by tightening the straps in the buckle. Step 9

Make sure the loose ends of the straps are tucked into the strap retainers. Step 10

With your hand held flat, you should be able to fit your fingers underneath your leg straps. Step 11

Hook your lanyard to the anchor point. Step 12

Knowledge Check

Click the audio icon to hear Kacy speak.

Let’s practice what we’ve learned in the module by going through this activity.

You and Miguel find out that you’ll be together again for this assignment.

Help him make the right fall safety decisions so today goes smoothly.

You and Miguel find out that you'll be working on the top floor. You tell him…

Select all that apply.

- [ ] "It looks like we're working above 6 feet."
- [ ] "Let's put on our fall protection gear."
- [ ] "It might get windy up there."
- [ ] "It looks like all the guardrails are put up."

Submit

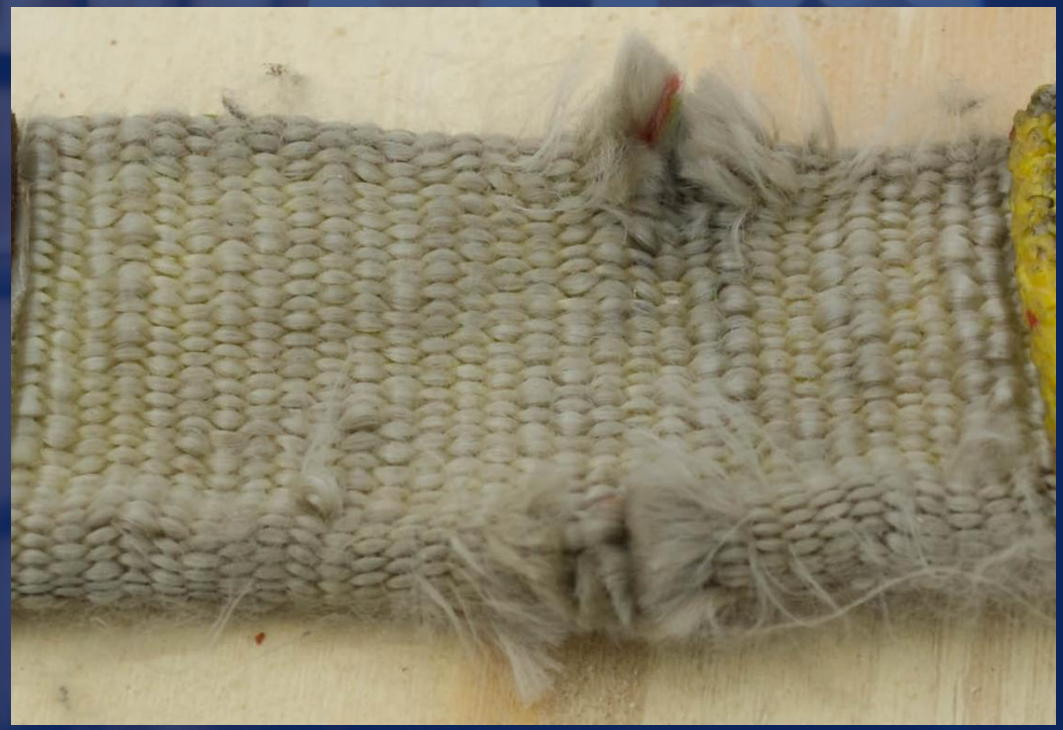
You head straight for the bin that has the fall protection equipment. Miguel starts putting on his harness right away. Is there anything wrong?

- No, there's nothing wrong. It's good that he's putting on his harness.
- Yes, there's something wrong. Let Kacy know that he should inspect it first.

Submit

“Thanks, man,” Miguel says. He inspects his equipment and sees that the material is frayed. What should Miguel do?

Select all that apply.



- [ ] Do not use this equipment.
- [ ] It doesn’t look too bad, use it anyway.
- [ ] Put it back inside the bin and look for another one.
- [ ] Do not put it back in the bin but bring it to the competent person.

Submit

When putting on his harness, you notice that the D-ring is not where it’s supposed to be on his back. Where should it be?

Select all that apply.

- By his neck.
- Between his shoulder blades.
- By the middle of this back.

Submit

You look over your own equipment and notice that the system has a body belt attached. What do you do?

- [ ] Use it. It’s not damaged or worn.
- [ ] Put it back inside the bin and look for another one.
- [ ] Do not use this equipment.
- [ ] Do not put it back in the bin but bring it to the competent person.

Submit

Why are body belts not acceptable for use?

- Because it’s part of company procedures.
- Because it’s uncomfortable.
- Because it causes major internal injuries in case someone falls.
- Because it is outdated.

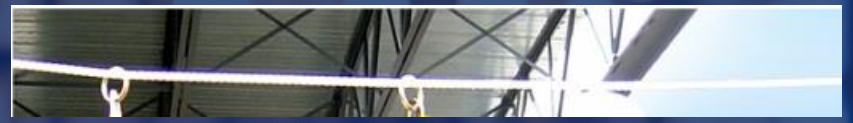
Submit

You both head up to the work site. You see Miguel hook up to the guardrails. What do you tell him?

- You understand. It gets as close as possible to the edge so he can work better.
- Never hook up to the guardrails. It will not support your weight in case there's a fall.
- He can hook up to the same anchorage point as you.
- He can hook up directly on the rope instead.

Submit

“Thanks, I forgot,” Miguel said. He takes it off the guardrails and starts to hook up his retractable lifeline to the same anchor point as you. What do you tell him?



- Yes, it’s okay, everything up here as been inspected by our qualified and competent person.
- No, each anchor point will only support the force of one person falling 5,000 pounds. If we’re on it together, it will be equal to 10,000 pounds of force.

Submit

“I guess I must have missed that on the training,” Miguel said. He connects to his own anchor point. After a while, you notice that Miguel is working on the edge but his anchor is way behind him. What can happen here?

- A swinging fall
- A total distance fall
- A straight drop fall
- Nothing, he is still anchored.

Submit

What do you tell Miguel so that type of fall doesn’t happen?

- He should replace his lanyard.
- He should put on a positing device system.
- He should watch where he’s going.
- He should keep the anchor point directly above his head at all times.

Submit

Knowledge Check

Kacy gets to go home to his family safely once again.

Great Job!

Click the audio icon to hear Kacy speak.

We’d appreciate your feedback.

Please take a moment to answer a few short questions about this course.

Start

How would you rate this course?

Submit

How do you feel after taking this course?

Great!

I’m feeling okay.

A bit overwhelmed.

Submit

How likely are you to recommend this training to a friend?

I won’t. I may. I will.

Submit

How could we have made this course better?

Submit

What did you like most about this course?

Submit

Thank you!.

We really appreciate your feedback and will take it into consideration for future improvements.

Continue

Thank you for completing

Fall Prevention: Module 3

Click here to confirm you have completed this course.