



COAA Best Practice Conference

Physical Demands Analysis (PDA)

Presenters:

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COAA PDA Project

- Committee Members:
 - Winston Fynn, Shell - Project Sponsor
 - Joe McFayden, CLRA - Committee Chair
 - Scott Boyer, Project Manager
 - Brad Bent, CLAC
 - Doug Dory, UA Local Union 488
 - Larry Jones, Ledcor
 - Robert Gould, Fluor
 - Reg Sopka, PCL
 - Ryan Henry, WCB/Millard Health

Agenda

- Impact of an Injury
- Physical Demands Analysis (PDA) Overview
- PDA Demonstration
- PDA Benefits
- Functional Evaluation (tools of the trade)
- COAA PDA Development Project Overview

Impact of an Injury

- Injury due to overexertion: #1
- Incidence of repeat injury: 35 %
- Average work days lost per claim: 23 days
- Average lost-time claim cost: \$87,500 (2014)

Impact of an Injury

Direct Costs

- Medical costs
- WCB premiums
- Safety investments

Indirect Costs

- HR/HSE administration costs
- Hiring & training replacement workers
- Production downtime
- Loss of products/services

Injury Risk Mitigation

- Safety Control: Find best fit between the worker and job requirements to avoid workplace injury
 - Informs individual of physical limitation and how to manage such limitation to avoid injury
 - Informs employer to assist in placement decisions based on individual physical capabilities

Physical Demands Analysis (PDA)

- Document outlines the essential physical requirements of a specific job
 - Manual handling
 - Positional requirements
 - Environmental conditions
- Completed by a qualified professional (physiotherapist, occupational therapist, kinesiologist, ergonomist) on the job site
- Typically 4-8 hrs to complete depending on job
- Cost – typically between \$600 - \$1500 per PDA

PDA Process

1. Assess risk of occurrence
2. Conduct Job Interview
3. Observe Job
4. Collect Data
5. Take Digital Pictures
6. Assemble Information
7. Verify Information

PDA Example

- An industrial construction company has identified an increased injury rate for their **Pipefitter** position. The HSE Manager has identified two workplace injuries that have resulted in a WCB claim over the last year. Due to the strenuous nature of the job and the increased injury rate, the company is considering implementing pre-work functional testing to verify that workers are able to complete the physical requirements of the job. They have requested a PDA at the worksite to identify and document the specific physical demands of the Pipefitter position.

PDA Demonstration

1. Establish Purpose

- Identify trades / tasks that have a high level or injury occurrence
- Identify injury types that would benefit from improved return to work times (reduce lost time)

PDA Demonstration

2. Job Interview (~1 hr)

- Determine objective, scope and requirements of job
 - Interview current employee working in position
 - Interview supervisor if available

- Can you give me an overview of the responsibilities of the job?
- What is the length of your work shift?
- What equipment/tools do you use most often?
- How many times would you lift X above shoulder level in a day?
- Can you describe your working environment / conditions / seasonality?

PDA Demonstration

3. Job Observation & 4. Data Collection

- Analyze job tasks and collect relevant measurements
 - Observe employee(s) completing essential tasks on site to understand the various demands of the job
 - Record measurements (weights, heights, distances)

PDA Demonstration

Essential Requirement	Frequency	Comments
Floor to Waist Lift (0-88cm)	Occasional	<i>Clinician to complete</i>
Waist to Shoulder Lift (89 – 150 cm)	Occasional	
Crouching	Rare	
Dominant Hand Use	Frequent	

PDA Demonstration

5. Digital Pictures

- Capture images of tasks, equipment and tools utilized



PDA Demonstration

6. Assemble information

- Clinician assembles information into comprehensive and easy to read chart

PDA - Pipefitter

PHYSICAL DEMANDS PROFILE

Job Title:	Pipefitter	Employer:	[REDACTED]
Hours of Work:	7 AM – 5 PM	Dept/Area	[REDACTED]
# and Length of Breaks:	30 min x 2	Union:	Yes
Actual Hours of Work:	9 hours	Report Completed By:	[REDACTED]
Shifts Worked:	Monday-Friday (weekends as required)	Date:	March 31, 2015 (data collection)

Job Objective

To ensure proper operation of plumbing and gas systems on site.

Essential Tasks

1. Propane tank placement and set-up.
2. Operating propane filling station.
3. Set-up plumbing, gas and H-Vac systems.
4. Commissioning plumbing, gas and H-Vac systems.
5. Maintenance of plumbing, gas and H-Vac systems.
6. Monthly inspections of plumbing, gas and H-Vac systems.
7. Heater installation in Quansits using scissor lift.

Equipment

- Pick-up truck, cargo van, scissor lift, small hand tools, ladders

Personal Protective Equipment

- Steel-toe boots, long pants, sleeved shirt, gloves, hardhat, hi-vis vest
- Hearing protection (as required)

Strength Requirements		Frequency					Mass (kg)		Essential Task	Comments
		1	2	3	4	5	Max	Usual		
Lifting/ Lowering Objects	Floor to Bench (0-88cm)			X			33.6	<1-33.6	Multiple tasks	The General Labourer generally lifts between heights from floor to waist height. Lifting frequency is occasional. Waist height lifting is expressed as 88 cm in this report. Propane bottle = 33.6 kg – 100 cm
	Bench to Shoulder (89-149cm)			X			33.6	<1-33.6	Multiple tasks	
	Floor to Shoulder (0-149cm)			X			33.6	<1-33.6	Multiple tasks	
	Above Shoulder (>150cm)								None	
Carrying Objects				X			33.6	<1-33.6	Multiple tasks	Farthest carry required would be only 5 m typically (would go on a truck after that)
	Distance (meters)						3	<1-5		
Pushing/ Pulling (Force)	Up/Down								None	Not required.
	Other			X			26.3	26.3	Propane dolly	Propane dolly = 26.3 kg, hand height = 130 cm

Mobility and Posture Requirements		Frequency					Essential Task	Comments
		1	2	3	4	5		
Standing					X		Multiple tasks	Standing is intermittent with walking. Standing on gravel, dirt, mud and metal outside, standing on linoleum and tile inside. Outside surfaces may become slippery from rain, snow, and ice.
Walking					X		Multiple tasks	Walking is intermittent with standing. Walking on gravel, dirt, mud and metal outside, standing on linoleum and tile inside. Outside surfaces may become slippery from rain, snow, and ice.
Sitting				X			Multiple tasks	Sit during breaks. Sit while driving trucks and van.
Climbing	Stairs		X				Multiple tasks	Into truck = highest step is 35 cm Into trailer = highest step is 20 cm
	Ladders		X				Multiple tasks	Highest step is 30 cm.
Balancing (1 foot)			X				Multiple tasks	Climbing up and down stairs and ladders.

Mobility and Posture Requirements		Frequency					Essential Task	Comments
		1	2	3	4	5		
Kneeling				X			Multiple tasks	Kneeling for lower level work such as fixing gas lines or piping. Time spent in position is worker's choice. Kneeling is interchangeable with crouching.
Crouching/Squatting				X			Multiple tasks	Crouching for lower level work such as fixing gas lines or piping. Time spent in position is worker's choice. Crouching is interchangeable with kneeling.
Crawling		X					Crawl space	Into crawl space 1 time/year.
Neck Movements					X		Multiple tasks	Looking up (extension) to change filter on furnace, looking down (flexion) for multiple tasks. Rotation utilized while walking and driving to watch for hazards. Lateral flexion utilized to improve sightlines when necessary.
Low Back Movements (flexion, extension, rotation)				X			Multiple tasks	Usually able to crouch/kneel to work at low levels. Stooping required for some awkward spaces, up to 5 seconds at a time. Rotation utilized for some awkward spaces.
Shoulder Reaching	Horizontal (Forward)				X		Multiple tasks	Forward reaching for multiple tasks, distance is worker's choice.
	Vertical (Up/Down)			X			Multiple tasks	The Pipefitter is required to reach to multiple levels while working. Reach heights range from 0-180 cm from floor/ground. Fan on furnace – 180 cm, regulator valve outside trailer = 155 cm
	Extension (Behind)						None	Not required.
	Side		X				Multiple tasks	As required to grab for supplies, worker's choice.
Elbow Movements					X		Multiple tasks	Intermittent non-neutral elbow postures required. Flexion and extension utilized with lifting and using small tools. Pronation and supination utilized with multiple small tool tasks.
Wrist Movements					X		Multiple tasks	Intermittent non-neutral wrist postures required. Flexion and extension utilized with multiple small tool tasks, radial and ulnar deviation observed in using tools in tight spaces..

PDA Demonstration

7. Verify information

- Clinician sends draft report to management for confirmation of information as well as labor representation if needed
- At times this will require a second visit to site by the clinician to validate task

PDA Benefits

- Orients new hires to tasks and demands
- Used by health professionals & case management to support RTW process (reduces treatment time and improves outcomes)

PDA → Functional Test

- Confirm minimum job requirements
- Identify functional limitations
- Provide info to support placement decisions and accommodation if necessary

Functional Test Demonstration

Job Requirement	Frequency	
Floor to Waist Lift 74 lbs	Occasional	Meets demand
Waist to Shoulder Lift 74 lbs	Occasional	Does not meet demand
Crouching/Squatting	Rare	Meets demand
Hand Grip	Frequent	Meets demand

Outcomes

- Fit
- Unfit
- Fit with recommendations
- Medical clearance

COAA PDA Project Overview

- Project funded by a special dividend from the Workers' Compensation Board of Alberta
- Goal: Injury prevention and improved return to work outcomes by reducing the cost of implementing PDAs throughout Industrial Construction (Industry code 40400)
- A cross representational committee to provide project oversight was created

COAA PDA Project Overview

- Initial research interviewing industry stakeholders (labour providers, contractors, owners, SME clinicians)
- RFP for a vendor qualified to develop a multitude of PDAs within Industrial Construction
- Identify sites and participating contractors / labour
- Develop a repository of PDAs accessible by COAA members and stakeholders of Industrial Construction
- Identify and publish a leading practices guide to developing and implementing PDAs in Industrial Construction

COAA PDA Project

- Leading practices for PDAs (draft)
 - Used for return to work and onsite labour deployment
 - PDA development to be completed by a cross sectional group including labour, management and qualified clinician
 - Minimum levels of physical requirement be used as measurement of activity (BFOR test)
 - Physical testing to be consistent and transparent, testing protocol published prior to test
 - Clinician provides support and advice throughout testing protocol to improve outcomes for participant