

# PHYSICAL DEMANDS ANALYSIS (PDA)



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## WHAT IS A PHYSICAL DEMANDS ANALYSIS (PDA)?

A Physical Demands Analysis is a systematic procedure to quantify, and evaluate all of the physical and environmental demand components of all essential and non-essential tasks of a job. PDA is a process of establishing what a job is in its entirety in a way that complies with the Ontario Human Rights Code. A PDA is the “cornerstone” of the analytical process used to determine compatibility between a worker and a specific job.

## WHY DO WE NEED A PDA?

With the recent passing of Bill 99 (*Workplace Safety and Insurance Act, 1997*), the Workplace Safety and Insurance Board (WSIB) has the right to request information about an injured worker’s functional abilities from a treating health professional (Sec. 37.3). The required information must be provided on a prescribed form distributed by WSIB. The purpose of obtaining an injured worker’s functional abilities is for “facilitating the worker’s timely return to work”.

One of the primary goals of a Functional Ability Evaluation (FAE) is to match an injured worker’s work capability to a job or task, without causing an overexertion injury. If the functional abilities of an injured worker are used to assess whether a worker can return to work (RTW), a PDA describing the job should also be developed. Without any information about the physical demands of a job's essential and nonessential duties, the functional ability information is not useful.

## HOW SHOULD PDA INFORMATION BE STRUCTURED?

There are many ways in which physical demands of a job can be structured. You may already have a PDA form in your workplace. OHCOW suggests the use of the PDA structure outlined in Appendix A.

Regardless of the type of structure, all PDA forms should have brief information about the job, a list of all essential and non-essential duties, and all activities associated with each duty. When PDA information is used for the purposes of returning to work, it should have the following objectives:

- Ability to document a job in a non-discriminatory manner;
- Comply with Ontario Human Rights Code (OHRC) – identify the essential and non-essential job functions, describe the work, and document the physical requirements of the job and the worksite;
- Use “objective” measurements to determine what is the standard

- Able to assist the injured worker to return to their previous job by identifying specific job tasks that are within the worker's working
- Develop restricted duties or modified work programs from the physical
- Provide union representatives and employers with information about reasonable accommodations for injured workers;
- Identify safety concerns, engineering and administrative improvements.

### WHO SHOULD BE CONDUCTING THE PDA?

A PDA should be conducted jointly by a worker and employer representative knowledgeable about PDA information. If an external consultant conducts the PDA, the worker and employer representatives should sign-off on the PDA information to indicate the accuracy and completeness of the consultant's analysis.

### WHAT IS THE PROCEDURE TO CONDUCT A PDA?

A PDA is a process of breaking up a job in order to examine its individual tasks. When conducting a physical demand analysis, investigators will objectively quantify and evaluate the environmental conditions, use of machines, equipment, tools, work aids, and physical demands of each task. To quantify the physical and environmental demands of the job, direct and indirect observation techniques are utilized.

The following is a general step-by-step discussion of the five components of the PDA Process.

#### STEP 1 – DETERMINE JOB FUNCTION:

Worker and employer investigators meet to discuss the existing information of the job title and job description. In most cases, there will already be a narrative job description.

Reviewing the existing job description, investigators should determine:

- If the job information is current;
- The purpose or intent of the position;
- Identify all different components of the job (*i.e. all related tasks*); and
- All essential and non-essential functions.

## STEP 2 - VERIFICATION OF JOB FUNCTION:

This process verifies that the duties and tasks outlined by the job description are actually performed in the job being analysed. The common work areas where the normal performance of the duties takes place must also be verified. Job analysts should obtain a clear understanding of the flow of the work going into and out of the workstation being analysed, and identify the relationship of the position being analysed to other positions in the department.

## STEP 3 - IDENTIFY JOB FUNCTION:

The third component of the PDA process is to identify or break down what functions of the job are essential and non-essential. Next, the investigators should determine as objectively as possible the various tasks, subtasks or functional components of the job/position. After determining the various tasks, subtasks, or functional components of the job/position, the investigators should quantify the duration of each task/subtask by:

- Timing the time spent performing each function using a stop watch;
- Calculating the percentage of time per day, week, or shift spent on various tasks; or
- Counting the cycles or repetitions of functions being performed.

## STEP 4 - QUANTIFY PHYSICAL DEMANDS OF EACH JOB FUNCTION

The fourth component of the job analysis process is to objectively quantify the physical and environmental requirements for each task/duty. In order to objectively measure the intensity, frequency, and duration of physical functions, the following measuring instrument should be used:

- weight scale
- tape measure
- push-pull gauge
- grip and pinch force gauge
- video camcorder
- stop watch
- other measurement devices specific to the workplace (*i.e. vibration instruments*)

The physical elements to quantify for each task can include the following activities:

1. mobility (*walking, sitting, standing, crouching, stooping, climbing, balancing, crawling, and kneeling*);
2. manual material handling (*lifting, pushing, pulling, and carrying*);
3. reaching (*vertical and horizontal work*);
4. handling;
5. fingering; and
6. proprioception (*feeling, seeing, taste/smell, talking and hearing*).

For each essential and nonessential duty, the investigators should determine if any of the physical elements are required to perform the task. If physical demands are required to perform a task, objective quantification of the intensity, frequency, and duration of each physical function should be recorded.

For example, in Appendix A, a PDA sheet is shown. The job title in this example is a Meterman/Learner job. The purpose of this job is to learn the correct procedure to clean and change residential and industrial meters. The job consists of three essential functions and two non-essential duties. Observing Table 1 (*Material handling by task requirement*), you will notice that essential task #1 is required to be performed for 60% of the shift. The physical demands for this task are lifting, carrying, reaching, handling, and fingering. The frequency, intensity, and various work parameters are outlined on the second column.

For essential task #2, the physical demands consist of lifting, pushing, pulling, reaching, handling, and fingering. The duration of essential task #2 is 20% of the shift. The frequency, intensity, and various work parameters are outlined on the third column.

From these two examples, you will notice that many tasks do not require the investigators to quantify all physical demands. However, if the investigators observed that a physical demand is required in order to perform the task/duty, quantification of all work parameters associated with the physical demand should be performed.

### STEP 5 - RECORD ALL PROCESSES

Once all physical demands of each task are quantified, the following process should be followed:

- 1) Enter the PDA data into a spreadsheet or word processor and create the initial report including the identification of all essential and nonessential functions of the job (*see Appendix A for examples*).
- 2) Submit an initial report to the Employer and Union representatives for review and sign-off.
- 3) The Employer and Union representatives return the initial report with any modifications/corrections in regard to the essential and nonessential function of the job.
- 4) Investigators prepare the final report according to all modifications/corrections.
- 5) The final report should be signed-off by worker and employer representatives, to indicate the accuracy of the physical demands analysis of the job.

### HOW DO I OBTAIN MORE INFORMATION ON PDA?

OHCOW has developed a detailed guideline to perform PDAs. If you like to obtain more information in this area, please contact the Occupational Health Clinics for Ontario Workers Inc. You can also request for information through our web page, [www.ohcow.on.ca](http://www.ohcow.on.ca).

**APPENDIX A: PHYSICAL DEMANDS ANALYSIS SUMMARY**

**Employer:** Job Title: Meterman/Learner  
**Dept/Div:** Meter Department **Effective Date:** 01/01/9\_  
**Location:** Toronto, ON **Plant:** Downtown  
**Job Contact:**

**Work Hours/Shifts:**

The average week is 40 hours, Monday to Friday. Meterman/Learner are assigned to work either one of two shifts, either 8am to 4pm or 8am to 6pm. Two 10 minute breaks and one 20-minute lunch are provided per shift.

**Job Purpose:**

Learning to clean and change residential and industrial meters.

**Essential Functions:**

1. Disassemble and re-assemble meters to clean moving parts using pliers, brush, screwdriver, and air tool.
2. Disassemble damaged meters, current and potential transformers to scrap individual parts using wrench, and screwdriver.
3. Mount current transformer to coil plate using wrench, screwdriver, and power tool.

**Non-Essential Functions:**

1. Perform housekeeping duties such as dusting, working with ladders etc.
2. Transport materials from basement using skid.

**General Observations:**

Meterman/Learner will be trained and become qualified in all aspects of shop and field work for the duration of approximately 6-8 months. A Meterman/Learner is expected to be able to clean a minimum of 16 meters per shift within 6 months of employment. The work is self-paced, but production volume for the day must be met. Once every 3-4 weeks, a Meterman/Learner will be expected to work from 8am to 6pm. On that week, the Meterman/Learner will work 4 days per week.

Most work areas have good lighting. On days in which work is performed outside, Meterman/Learner will be exposed to a variety of temperatures and weather conditions. These working conditions will vary, depending on the seasonal climate. The most significant physical demand is the potential to handle 100 lb transformers, and frequent standing. On heavy manual material handling tasks, teamwork (2-3 co-workers) will be provided.

## TABLE 1: MATERIAL HANDLING BY TASK REQUIREMENT

Manual Material Handling Activities	Ess. Task 1 (60%/shift)	Ess. Task 2 (20%/shift)	Ess. Task 3 (5%/shift)	Noness. Task 1	Noness. Task 2
<b>Lifting:</b> Beginning Heights(in) Ending Heights(in) Weights (lbs) Frequency(#/min)	6-40" 6-34" 6-32 lb 0.04	9-34" 9-36" 6-50 lb 0.01	36" 55" 20-80 lb (1-2/month)	18-20" 17-20" 38-50 lb Occasional	30-35" 71-75" 20-35 lb 0.01
<b>Carrying:</b> Weight (lbs) Distance(in) Frequency(#/min)	6-32 lb 960 0.03		20-80 lb 20-25" (5-10/month)		34-46" 30-40 lb (1/day)
<b>Pushing:</b> Push Heights(in) Horizontal Force(lbs) Frequency(#/min)		30-33" 45-60 lb (1-2/week)			34-46" 30-40 lb (1/day)
<b>Pulling:</b> Pull Heights(in) Horizontal Force(lbs) Frequency(#/min)		30-33" 45-60 lb (12/week)			
<b>Reaching (&lt;10 lb):</b> Front Distance(in) Vertical Height(in) Reach Direction Frequency(%/shift)	25-28" 9-60" Front 17.9	25-30" 36" Front 9.9	25-30" 36" Front 1.5		
<b>Handling:</b> Weight of Object(lbs) Grip Force(lbs) Diameter(in) Frequency(%/shift)	3-8 lb 4-7" 9.8	3-35 lb 40-50 lb 2-7" 4.64	6-10 lb 30-50 lb 2-6" 1.6		
<b>Fingering:</b> Weight of Object(lbs) Pinch Force(lb) Pinch Type Finger Flexion (x) Frequency(%/shift)	4-6 lb 6-15 kb key, 3-pt 32.3	4-6 lb key, 3-pt 5.5	1-4 lb 10-15 lb 2 pt X 1.8		

Ess = Essential Task; Noness = Non-essential task



**TABLE 2: BODY POSTURE BY TYPE OF ACTIVITIES**

All values are weighted average (in percent) per shift.

Activities	Essential task 1: cleaning meters (60%/shift)	Essential task 2: dissemble meters (20%/shift)	Essential task 3: mount CT on coil plate (5%/shift)
<b>Back:</b>			
Straight/neutral	57.1% (Frequent)	12.2% (Occasional)	2.7% (Occasional)
Stoop/flex	2.9% (Occasional)	5.8% (Occasional)	2.2% (Occasional)
Twist/side bend	0% (Never)	1.7% (Occasional)	0% (Never)
Twist & stoop	0% (Never)	0.29% (Occasional)	0% (Never)
<b>Arms:</b>			
Below shoulder	54.8% (Constant)	20% (Occasional)	4.0% (Occasional)
At/above shoulder	5.2% (Occasional)	0% (Never)	0.96% (Occasional)
Overhead	0% (Never)	0% (Never)	0% (Never)
<b>Legs:</b>			
Sitting	36.4% (Frequent)	0% (Never)	0% (Never)
Standing still	21.8% (Occasional)	19.1% (Occasional)	4.3% (Occasional)
Walking	1.7% (Occasional)	0.87% (Occasional)	0.5% (Occasional)
Kneeling	0% (Never)	0% (Never)	0% (Never)
Crouching	0% (Never)	0% (Never)	0.2% (Occasional)
Crawling	0% (Never)	0% (Never)	0% (Never)
Lying	0% (Never)	0% (Never)	0% (Never)

Frequency defined by the Ministry of Labour is 1-33% for Occasional, 34-66% for Frequent, and 67-100% for Constant

## VERIFICATION AND ACCEPTANCE

The job description for Meterman/Learner has been reviewed on January 1, 200\_, and is believed to be an accurate representation of the job content.

\_\_\_\_\_  
Superintendent – Meter Department

\_\_\_\_\_  
Union Representative

If you need further assistance, call the Occupational Health Clinic for Ontario Workers Inc. closest to you:

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