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Physical Demands Description Handbook

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What is a Physical Demands Description (PDD)?

Physical Demands Description (PDD):

A systematic procedure to quantify and evaluate all of the physical, environmental and cognitive demands of all **essential** and **non-essential** tasks of a job.



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Who relies on PDD information?

- Internal
 - Human Resources
 - Health & Safety
 - Occupational Health
 - Supervisors
 - Engineers
- External
 - Physicians
 - Physiotherapists
 - Occupational Therapists
 - WSIB Adjudicators
 - Insurance Providers



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What is the PDD used for?



Communicate job requirements to healthcare professionals



Provide data for use in adjudication of injury claims

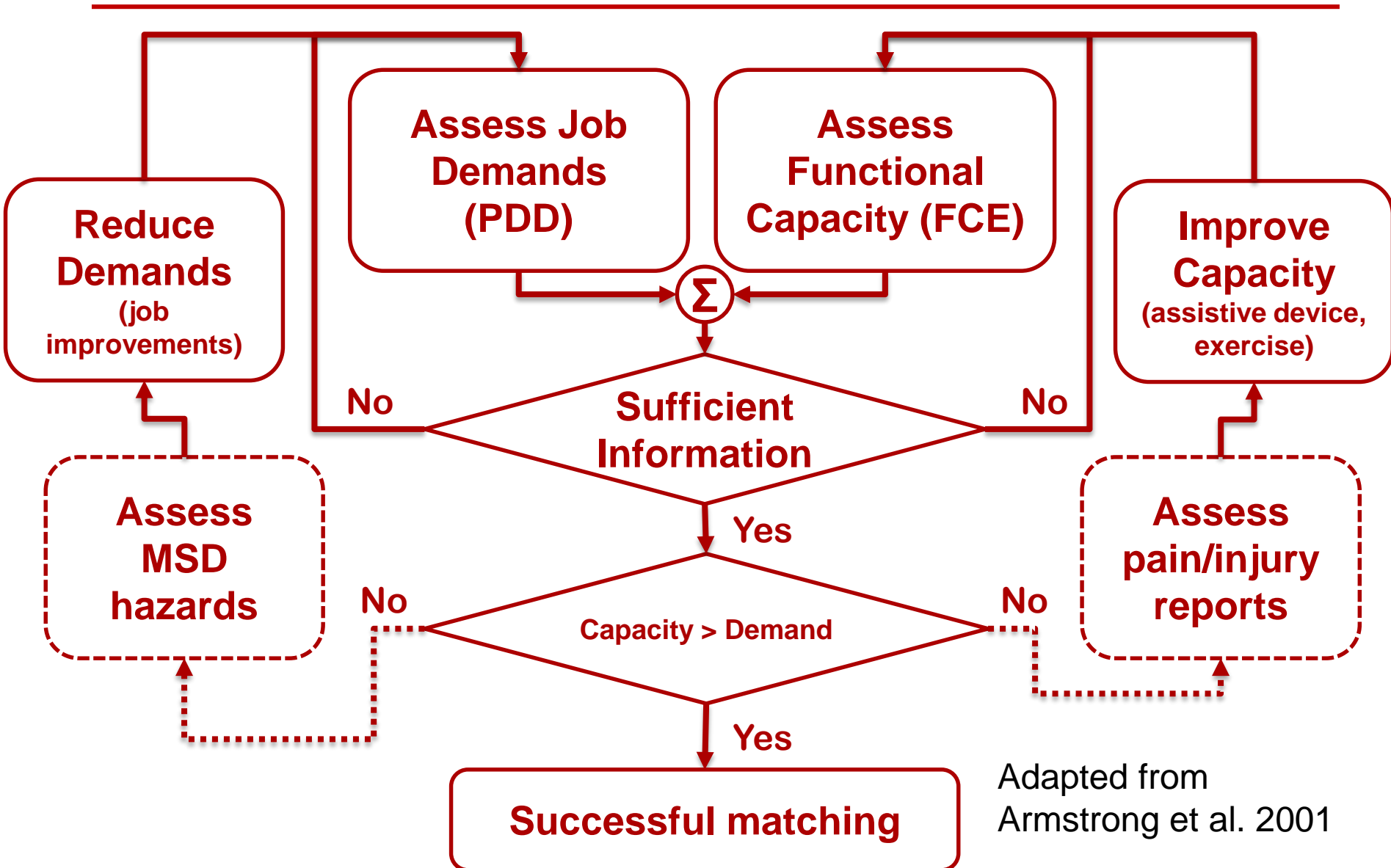


Identify areas for further analysis (i.e. MSD hazards)



To provide information for hiring and training

One example of its application



Adapted from
Armstrong et al. 2001

The legal reason for the PDD

Workplace Safety and Insurance Act, 1997 Section 37(3)

*“When requested to do so by an injured worker or the employer, a health professional treating the worker shall give the Board, the worker and the employer such information as may be prescribed concerning the worker’s **functional abilities**. The required information must be provided on the prescribed form.”*



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Who completes the PDD?

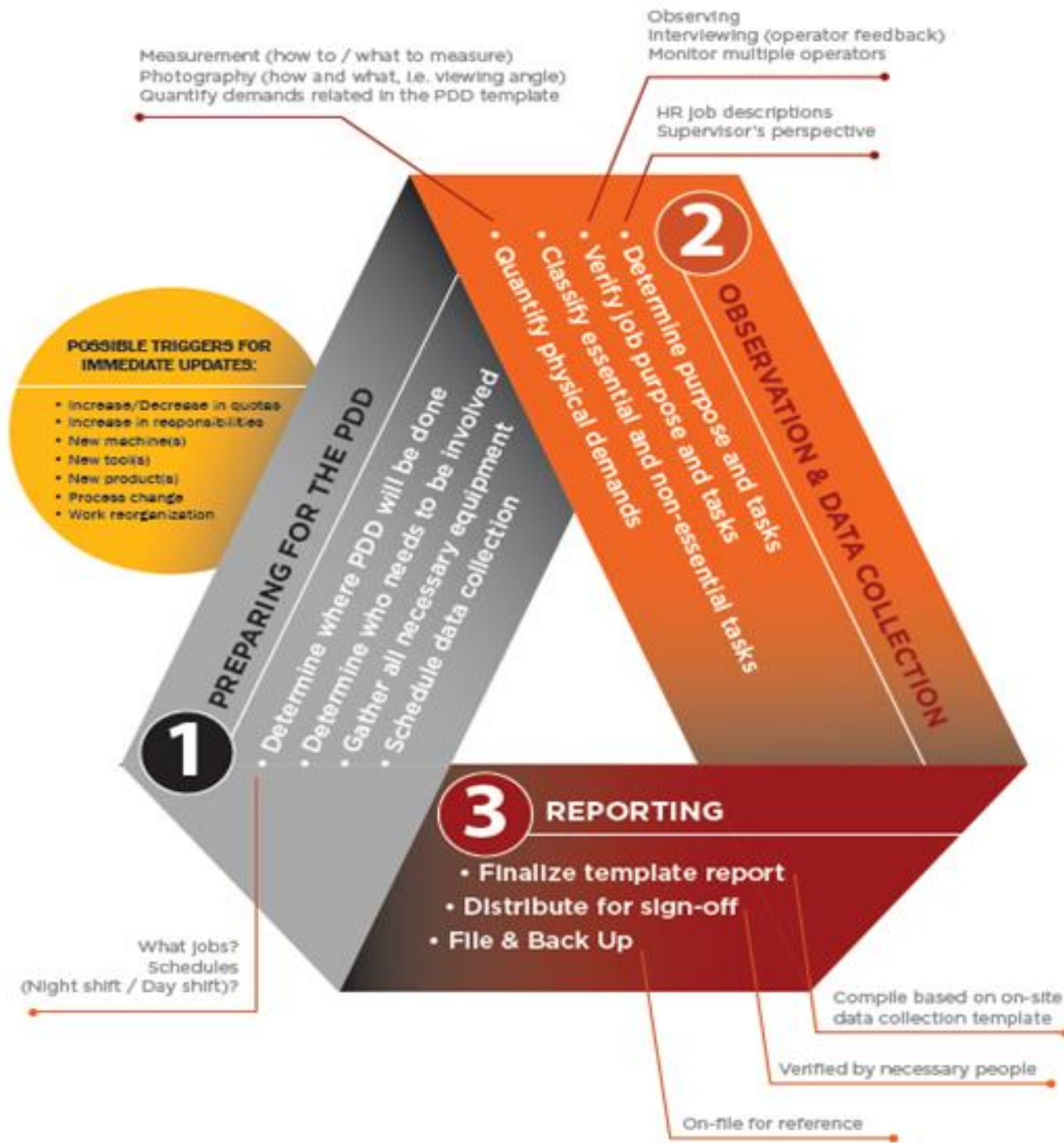
- Internal Staff (Managers, Supervisors, etc.)
 - preferably someone with expertise in health and safety
- Trained experts (Hired Consultants)
 - Always check credentials!
- Certified Ergonomist
 - Canadian Certified Professional Ergonomist (CCPE)

A worker performing the job should always be present to observe “sign-off” to confirm the completeness



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Preparing to conduct a PDD

- Determine where PDD(s) are required
- Determine who needs to be involved
- Have trained observer(s)
- Have all necessary equipment
- Schedule observation & data collection



Observation & Data Collection

- Determine job purpose & tasks
- Verify purpose & tasks
- Quantify physical demands
- Classify essential & non-essential tasks



Observation & Data Collection

- Measurement Tools



- Measurement Techniques

- Average multiple measures
- Record absolute values
- Include maximum ranges



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Observation & Data Collection

- Environmental Factors
 - Noise, lighting, vibration, temperature

- Photographs



Observation & Data Collection


- Physical Demand Elements



Physical Demand Task Details

Physical Demand Element	Measures to Document in the PDD						
Lift/Lower	Frequency	Weight	Start Height	End Height	Hand(s) Used	Reach	Grip Type
Carry	Frequency	Weight	Height	Distance	Hand(s) Used	Reach	Grip Type
Push	Frequency	Average Force	Max Force	Height	Distance	Hand(s) Used	Grip Type
Pull	Frequency	Average Force	Max Force	Height	Distance	Hand(s) Used	Grip Type
Reach	Frequency	Height	Distance	Hand(s) Used			
Grip	Frequency	Force	Height	Direction	Hand(s) Used	Reach	Grip Type
Pinch	Frequency	Force	Height	Pinch Type	Hand(s) Used	Reach	
Write	Frequency	Duration	Height	Surface	Tool Type		
Fine Finger Movement	Frequency	Duration	Height	Finger(s) Used	Hand(s) Used	Precision Level	
Sit	Duration	Seat Height	Dimensions	Surface			
Stand	Duration	Surface	Footwear				
Walk	Duration	Distance	Surface	Footwear			
Kneel	Frequency	Duration	Knee(s) Used	Surface			
Crouch/Squat	Frequency	Duration					
Balance	Duration	Leg(s) Used	Surface				
Crawl	Frequency	Duration	Distance	Surface			
Climb	Frequency	Duration	Distance	Surface			
Taste	Frequency	Food(s)	Precision Level				
Smell	Frequency	Odour Type(s)	Precision Level				
Speech	Frequency	Information	Level of Detail				
Hear	Frequency	Duration	Sound(s)	Sound Level			
Feel/Tactile	Frequency	Duration	Material(s)	Precision Level			
Vision/Read	Frequency	Information	Level of Detail				
Data Entry	Frequency	Information	Technology	Hand(s)			
Driving	Duration	Hand Height	Vehicle	Surface	Surroundings		
Foot Action	Frequency	Force	Height	Object	Foot/Feet		
Handling of Odd Objects	Frequency	Duration	Weight	Height	Object		

PDD Template

1. Driving Loader 	Task Duration	<i>The worker will move sand and stone from storage lots on the plant yard to an underground hopper that funnels materials onto a conveyor belt.</i>					
	5-15 minutes per material						
	Task Frequency						
	12 – 15 times per shift						
Task Elements	Duration	Seat Height	Dimensions	Surface			
<i>Sit</i>	5-15 minutes	55-65 cm	45 x 45 x 12 cm	Cushioned			
	Duration	Hand Height	Vehicle	Surface	Surroundings		
<i>Driving</i>	5-15 minutes	80 – 85 cm	Front-End Loader	Gravel	Other Vehicles		
	Frequency	Force	Height	Object	Foot/Feet		
<i>Foot Action</i>	10 times per minute	25-28 kg	15 cm	Accelerator	Both		



Reporting

- Finalize PDD document
- Distribute for approval & sign-off
- File & Backup



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Future Considerations

- Timeline for review & updates
- Use of data for MSD prevention



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PHYSICA

Date December 18, 2006
 Department Communications

PHYSICAL DEMANDS

STRENGTH

- Lifting
- Carrying
- Pushing
- Pulling
- Handling
- Throwing
- Gripping
 - Power Grasp
 - Pinch Grasp
- Reaching
 - Above Shoulder
 - Below Shoulder
 - To the Side

POSTURES

- Shoulder
 - Abduction
 - Flexion
- Hip
 - Abduction
 - Flexion/Extension
- Wrist
 - Radial/Ulnar Deviation
 - Pronation/Supination
- Trunk
 - Extension
 - Side Bending
 - Twisting
- Neck
 - Flexion/Extension
 - Side Bending
 - Twisting

MOBILITY

- Sitting
- Standing
- Walking
- Climbing
- Crawling
- Crouching
- Kneeling
- Balancing
- Foot Pedal Action
- Fine Motor

(PDD)

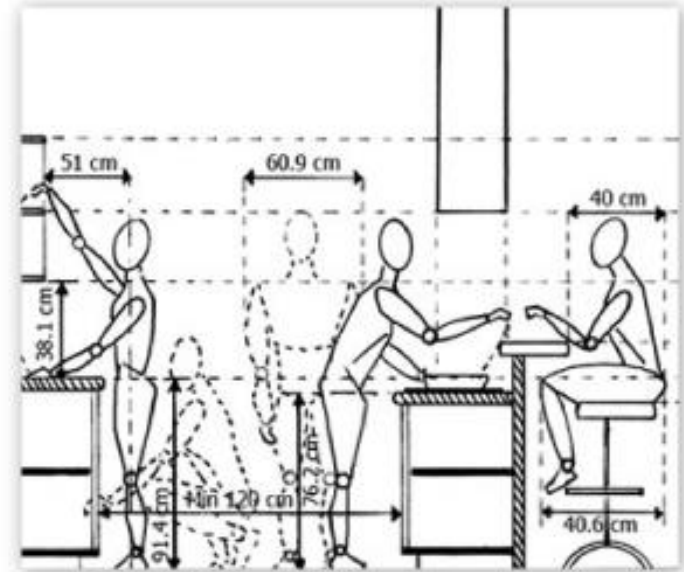
Physical Demands Analysis

PHYSICAL DEMAND	TASK #	FREQUENCY					DESCRIBE ACTIVITY Note distances, durations and surfaces
		N	R	O	F	C	
MOBILITY							
Walking		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Standing		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sitting		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Crawl		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Driving (Forklift/Vehicle/Other)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
POSTURE - Back							
Bending Forward		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bending Backwards		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Twisting		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
POSTURE - Reaching							
Above Shoulder Level		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note forward and/or side reach distances Select...
Chest to Shoulder Level		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Below Chest Level		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Behind Body		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
POSTURE - Elbow/Forearm/Wrist							
Elbow Flexion/Extension		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select...
Wrist Flexion/Extension		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wrist Rotation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
POSTURE - Neck							
Forward Bending/Flexion		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select...
Backward Bending/Ext.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Twisting/Turning/Tilting		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
POSTURE - Hip/Knee/Ankle/Foot							
Crouching/Squatting		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Kneeling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Climbing (Stairs/Other)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jumping		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Foot Pedal/Action		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

N = Not required, R = Rarely

Objective vs. Subjective PDD Information

- Absolute measurements are key
- Reduce generalizations and guesswork
- A PDD should reflect the job not the worker
- Relying on subjective information may be problematic



PDD Training & Evaluation Research

- 3 Hour Workshop (2 x 90' sessions)
 - Time allotted in undergraduate curriculums & JHSC COURSES (Robins & Klitzman, 1988)
- Interactive design
 - Brief lecture periods
 - Individual and small group activities
 - Familiarization with measurement tools



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PDD Workshop



Personal work history examples

Video demonstrations

Demonstrated in-class scenarios



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Assessing Job Simulations

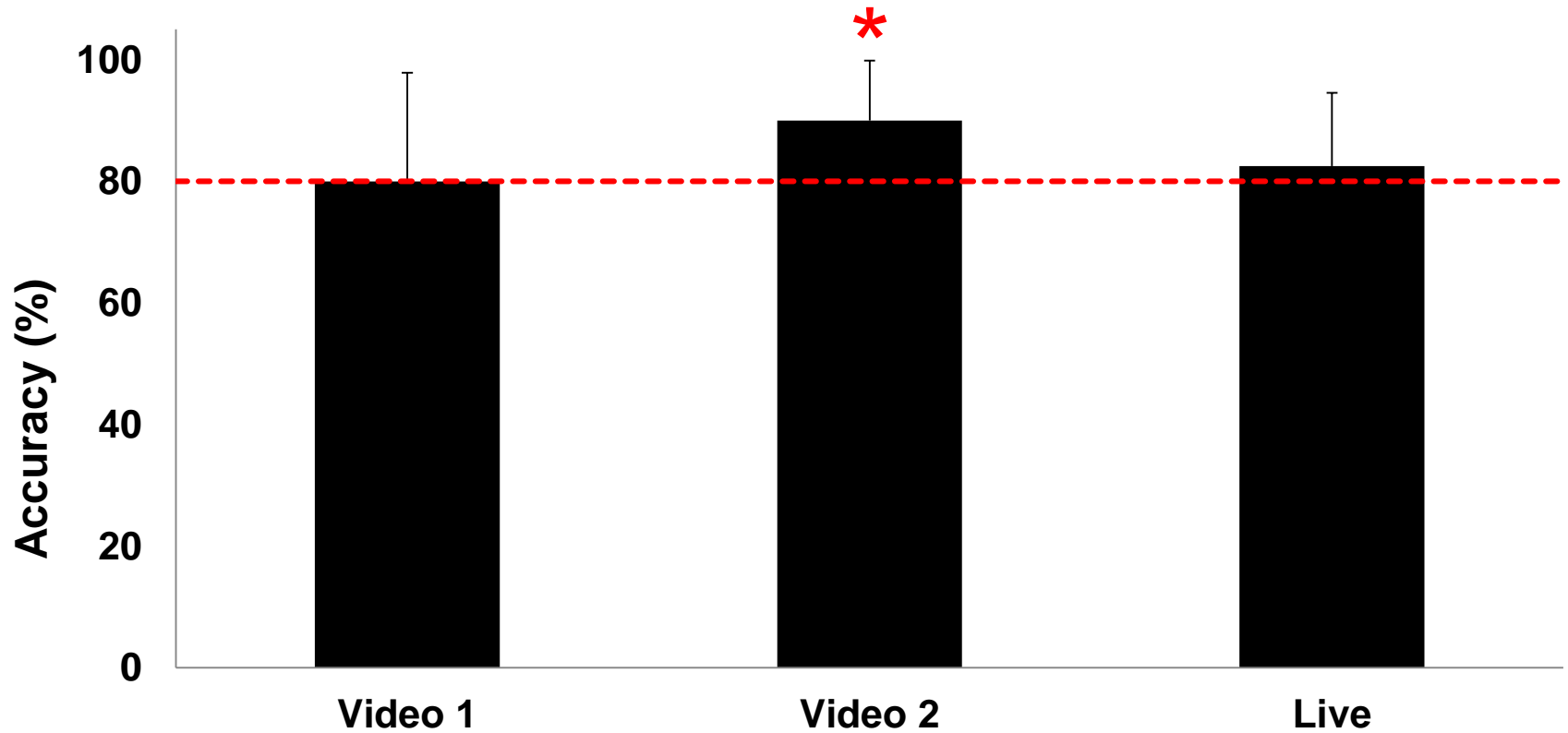


Participants were asked to **identify** & **quantify** physical demands

Identification results compared to an **80%** accuracy threshold

Quantification results compared to a **10%** error threshold

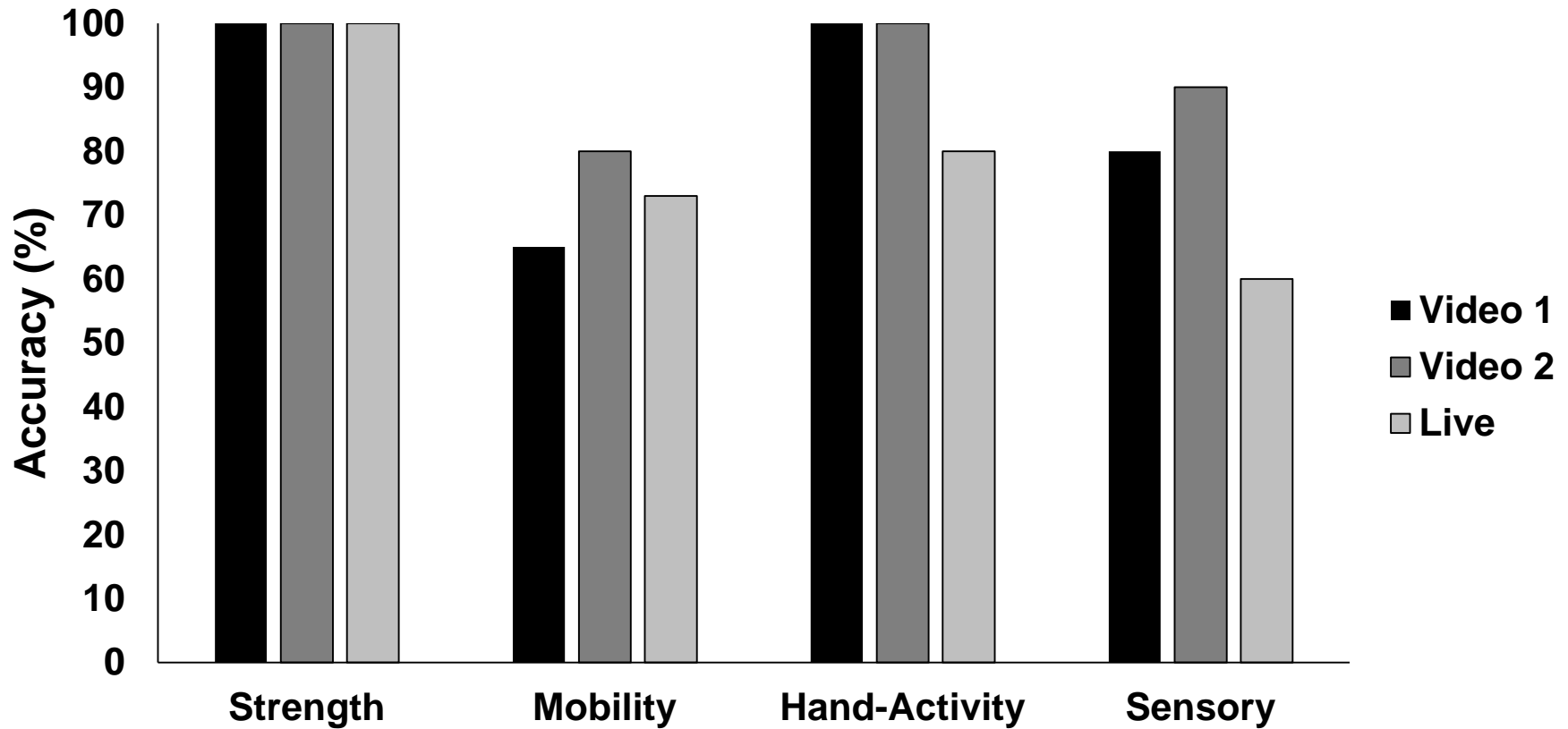
Results - Identification



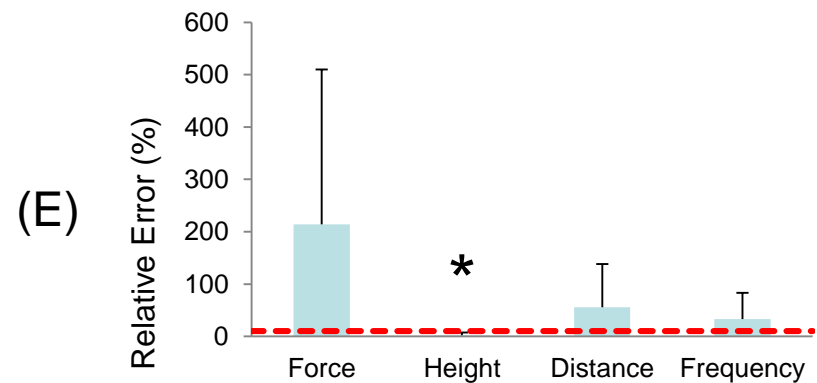
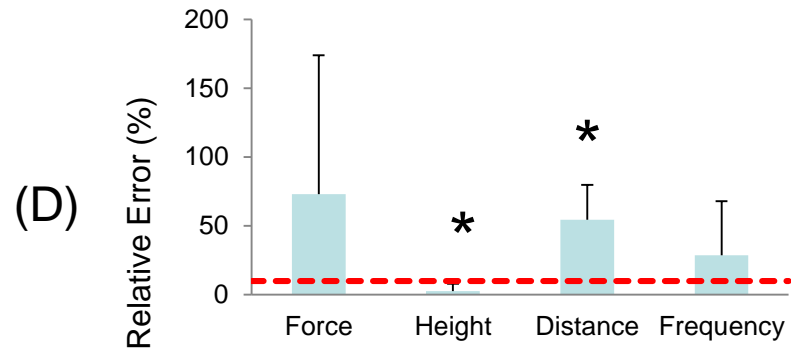
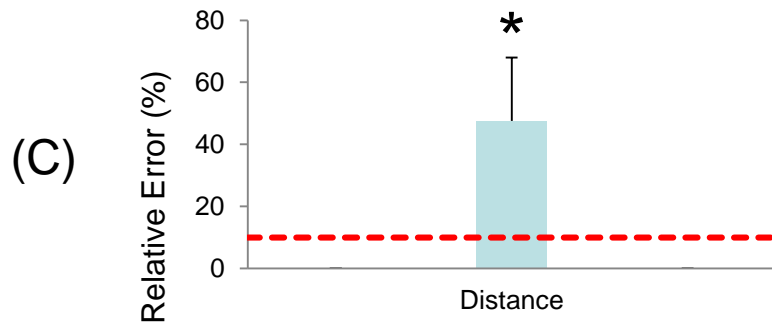
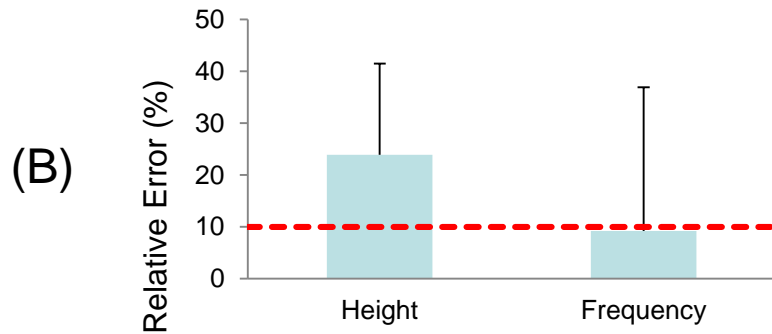
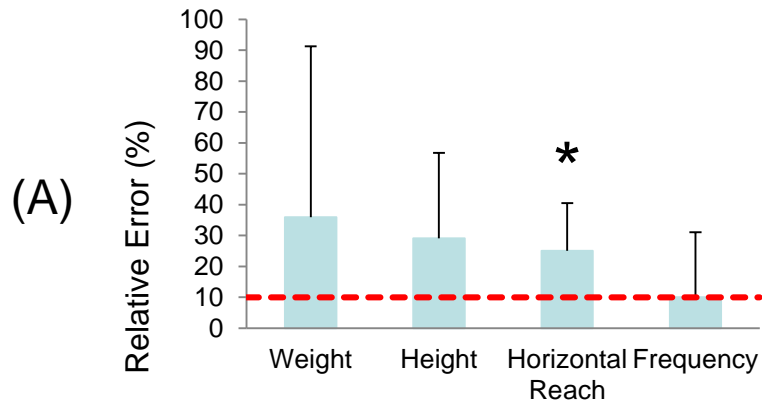
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Results - Identification



Results – Measurement



A = Lift/Lower
D = Push

B = Grip
E = Pull

C = Walk

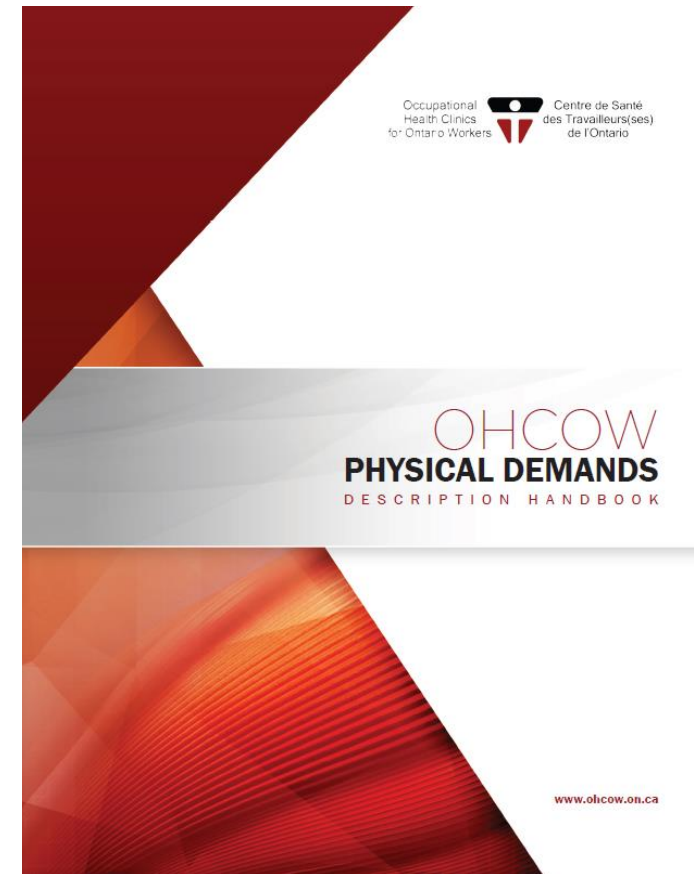
What We Learned

- Participants accurately identified physical demand elements as a group
- Participants did not accurately quantify physical demand elements
- Be cautioned to who is collecting PDD data, their training, experience, credentials, etc.



Take Home Message

- Emphasis on process, considerations, and measurement techniques
- Template is applicable in wide range of settings
- Can be used as either stand-alone or additional resource for your current PDD program



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