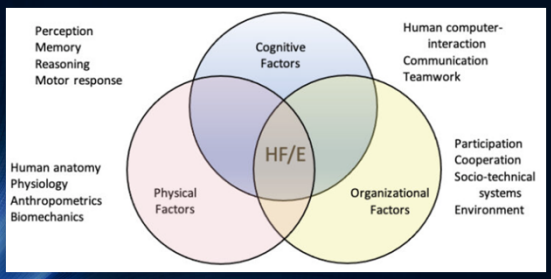
Ergonomics Program Solutions & Implementation:

A PROCESS APPROACH

PHIL VAN ESS, CPE

1

Remind me, what is Ergonomics?



International Ergonomics Association

2

Remind me, what is Ergonomics?

- It has evolved in our world….try to keep up!
- We're all in business, ergonomics fits here!
- Ergonomics is a **solution** to a problem.
- *From IEA: …the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance*
- *From the Human Factors and Ergonomics Society : The goal of human factors is to reduce human error, increase productivity, and enhance safety and comfort with a specific focus on the interaction between a human and the thing of interest.*
- Simple Goal: Produce a high quality product, faster and safer, and without error.

3

So, how do we do that?

- Engineer the task/process so that it can be completed by a wide range of employees.
- Ensure that people assigned to tasks have the necessary capabilities to succeed.
- Remove waste and potential for errors from the process.
- Standardize as much as possible.
- Audit your changes.

Sounds like Continuous Improvement, no?

4

Start from the beginning

- Develop Internal Engineering and Design Standards
  - ANSI / ISO
    - ISO 6385:2016 - Ergonomics principles in the design of work systems
    - ISO 11228-1:2021 - Ergonomics - Manual Handling - Part 1: Lifting, Lowering And Carrying
    - Design Adjustability into machinery and processes
- Use anthropometry to your advantage
  - US Army Tables – good for general use
- Hiring practices
  - Post-Offer / Pre-Employment

5

Physical Demands Assessment

- Quantify the Work:
- Uses standard terminology and measurements found in the Dictionary of Occupational Titles.
- DOES NOT QUANTIFY RISK
- Simply describes what is necessary to complete the essential functions of the job.

- Great for:
  - Job Descriptions
  - Return to Work
  - Time-studies
  - Framework and basis for POPE test

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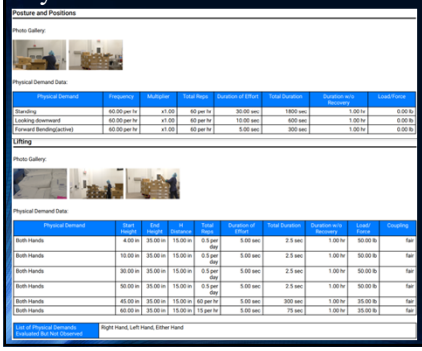
Physical Demand Assessments



Posture and Positions

Photo Gallery:

Physical Demand Data:

Physical Demand	Frequency	Multiplier	Total Reps	Duration of Effort	Total Duration	Duration w/o Recovery	Load/Force
Standing	60.00 per hr	x1.00	60 per hr	30.00 sec	1800 sec	1.00 hr	0.00 lb
Looking downward	60.00 per hr	x1.00	60 per hr	10.00 sec	600 sec	1.00 hr	0.00 lb
Forward Bending(active)	60.00 per hr	x1.00	60 per hr	5.00 sec	300 sec	1.00 hr	0.00 lb

Lifting

Photo Gallery:

Physical Demand Data:

Physical Demand	Start Height	End Height	HI Distance	Total Reps	Duration of Effort	Total Duration	Duration w/o Recovery	Load/ Force	Coupling
Both Hands	4.00 in	35.00 in	15.00 in	0.5 per day	5.00 sec	2.5 sec	1.00 hr	50.00 lb	fair
Both Hands	10.00 in	35.00 in	15.00 in	0.5 per day	5.00 sec	2.5 sec	1.00 hr	50.00 lb	fair
Both Hands	30.00 in	35.00 in	15.00 in	0.5 per day	5.00 sec	2.5 sec	1.00 hr	50.00 lb	fair
Both Hands	50.00 in	35.00 in	15.00 in	0.5 per day	5.00 sec	2.5 sec	1.00 hr	50.00 lb	fair
Both Hands	45.00 in	35.00 in	15.00 in	60 per hr	5.00 sec	300 sec	1.00 hr	35.00 lb	fair
Both Hands	60.00 in	35.00 in	15.00 in	15 per hr	5.00 sec	75 sec	1.00 hr	35.00 lb	fair

List of Physical Demands Evaluated But Not Observed	Right Hand, Left Hand, Either Hand

Quantify:

- Forces
- Repetitions
- Effort time
- Recovery time
- Cycle times

- DOT reference

7

Post-Offer / Pre-Employment testing

- Functional test to validate the candidate can perform the essential functions.
- May provide insight into tasks that limit availability of candidates and make it too hard to find people.
- Use with extreme caution!

Test	Force lbs	Reps	Description	Able	Unable
Endurance Standing	0 lb	1 Rep	Must stand throughout test	Able	Unable
Static Single Hand Grip	50 lb	1 Rep	Position 2 – Either hand	Able	Unable
Endurance Grip	20 lb	2 Rep	Position 2 - Hold 20 seconds – Alternate hands twice (2 each).	Able	Unable
Lift (Two Hand)	25 lb	2 Reps	24 in – 35 in	Able	Unable
Lift-Carry (Two Hand)	35 lb	1 Reps	30 in – Waist – Carry 10 ft	Able	Unable
Two Hand Push	40 lb	3 Reps	Push forward – Height 40 in	Able	Unable
Two Hand Pull	40 lb	6 Reps	Pull back – Height 40 in	Able	Unable
Wall Agility Test	15 lb	3 Reps	Stand at arm's length. Touch medicine ball to 8 points.	Able	Unable
Push, Pull & Flip	25 lbs	30 Reps	Push out until arms fully extended	Able	Unable
Functional Grip	25 lbs	3 Reps	Test each hand, Arm extended 20 inches from midline.	Able	Unable
Balance Test	0 lb	1 Rep	10 ft forward, 3 steps backward, turn and return walking forward	Able	Unable
Industrial Step Ladder	0 lb	3 Reps	Must complete in 30 seconds	Able	Unable

8

POPE offers Protection and Efficiency

PROS

- Defense against ADA and EEOC claims
- Decreases Work-Related Injuries
- Decreases Worker's Compensation Costs
- Improves Employee Retention
- Improves Productivity and Operational Efficiency
- Decreases Health Care Costs
- Supports our Family-First Culture
- Best-Practice

CONS

- Increases time to hire by one hour/employee
- Logistics of testing
- May reduce size of the candidate pool

9

Employee Training

- Risk Factors
- Tasks with elevated risk specific to their role
- Hands-on training in biomechanics
  - Use actual materials or props
- Teach work prep activities
- Trained mentors observe and give feedback right away

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Ergonomic Standard Work – Work Preparation/F4D

Emphasized Stretches By Activity	
Job Task	**Emphasized Stretch Number**
Pushing – Arms and Back	4, 11, 16, 17, 18
Pulling – Arms and Back	4, 11, 16, 17, 18
Lifting and Carrying	4, 11, 18
Forklift – Sit-Down - Legs	4, 12, 13, 17
Forklift – Stand Up	4, 5, 11, 15
Hand Controls	19, 20, 21, 22, 23, 24
Grasping and Holding - Hands	2, 3, 19, 20, 21
Looking Down at Conveyor - Neck	1, 7, 12, 15
Pinching - Hand	22, 21, 25
Finger Manipulation - Hand	21, 22, 24, 25
Working at Conveyor	6, 11, 12, 16
Sitting and Driving	4, 5, 17
Hand Tools / Knives – Hand and Arm	19, 20, 24
Reaching - Arm	6, 8, 11, 7, 16, 23
Placing Product in Box	1, 6, 19, 20

Emphasized Stretches By Task	
Job Task	**Emphasized Stretch Number**
PU - Maneuvering Pallet Jack	4, 11, 16, 17, 18
Moving Equipment	4, 11, 16, 17, 18
Feeding Line – Blocks of Cheese	4, 11, 18
PU - Palletizing Product	4, 11, 18
Warehouse – Stand-Up Forklift	4, 5, 11, 15
Warehouse – Forklift Hand Controls	19, 20, 21, 22, 23, 24
PU - Work at Conveyor - Neck	1, 7, 12, 15
PU - Working at Conveyor	6, 11, 12, 16
Driving Vehicle – Truck or Car	4, 5, 17
Hand Tools / Knives – Hand and Arm	19, 20, 24
Placing Product in Box	1, 6, 19, 20
Climbing / Stepping – Legs and Back	4, 12, 13, 17
Office - Working on Computer	1, 2, 3, 21, 23
Office Static Work - Back	4, 5, 11, 17

11

We've had a soft tissue injury, now what?

12

PDCA Process

- Ergonomics is a solution, remember?
- Plan – Say what we will do
- Do – Do what we said we would do
- Check – Confirm that we are doing what we said we would do
- Act – Institutionalize, document, and audit to prevent variance and drift from standard process.

First, we need data!

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Tools for the planning process

- PDA
- Risk Assessments
- Post-Offer/Pre-Employment testing
- Ergonomic Standard Work
- Work Preparation - Stretching/Nerve Glides/Fit-for-Duty
- Ergonomic Solution Teams &PACE Charting
- Audits & Observations
- Training – Get physical!

14

Data Collection and Analysis

- Data drives decision-making - Good data drives results
- Don't react to quickly
- There is an ocean of data available
  - step back, see big picture
  - don't always go after the 1st thing you see
- Look for trends and broader similarities in the data
- Where do I start?

15

OSHA 300's & First Aid Logs & FROI


OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20

U.S. Department of Labor
Occupational Safety and Health Administration

- There may be some easy, obvious wins here.
- Do not rely on this for long term success
- Look for strains and sprains
- Group body parts in buckets, look for similarities

Data Collection and Analysis

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Near Miss Data and BBSOs

- Goldmine!
- Gather and evaluate all injury, illness, first aid, near misses and observation data
- Sortable and minable in software

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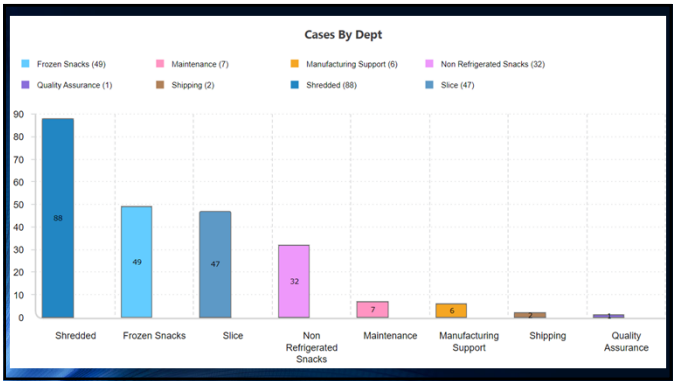

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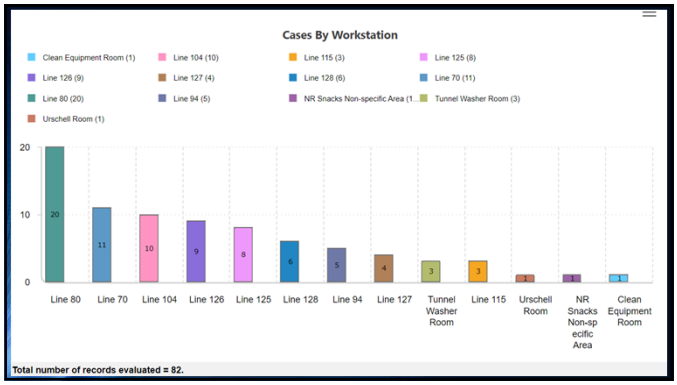
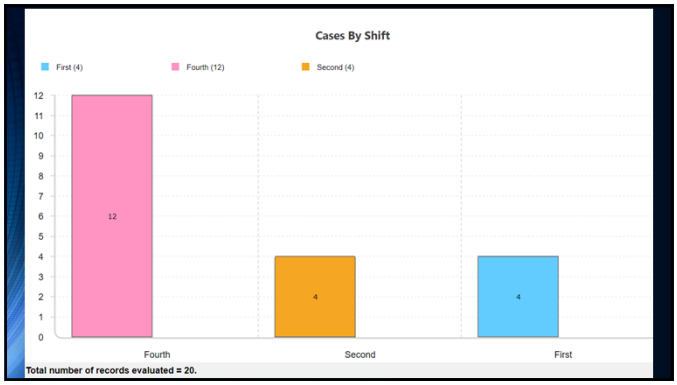
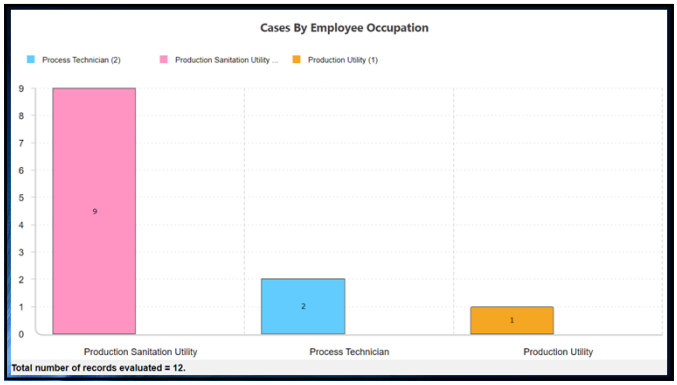

Cases By Workstation
Clean Equipment Room (1)
Line 104 (10)
Line 115 (3)
Line 125 (8)
Line 126 (9)
Line 127 (4)
Line 128 (6)
Line 70 (11)
Line 80 (20)
Line 94 (5)
NR Snacks Non-specific Area (1...
Tunnel Washer Room (3)
Urschell Room (1)
20
10
0
20
11
10
9
8
6
5
4
3
3
1
1
1
Line 80
Line 70
Line 104
Line 126
Line 125
Line 128
Line 94
Line 127
Tunnel Washer Room
Line 115
Urschell Room
NR Snacks Non-specific Area
Clean Equipment Room
Total number of records evaluated = 82.

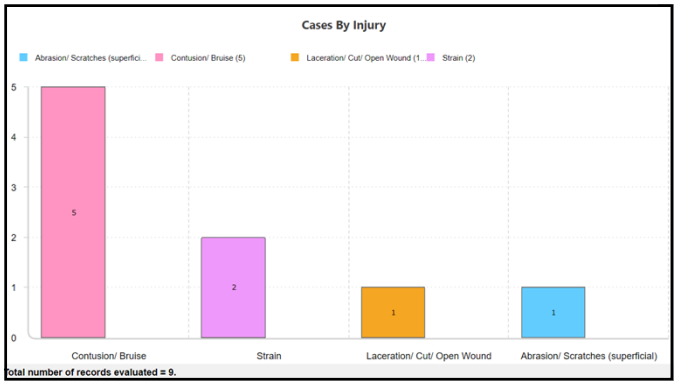
19


Cases By Shift
First (4)
Fourth (12)
Second (4)
12
11
10
9
8
7
6
5
4
3
2
1
0
12
4
4
Fourth
Second
First
Total number of records evaluated = 20.

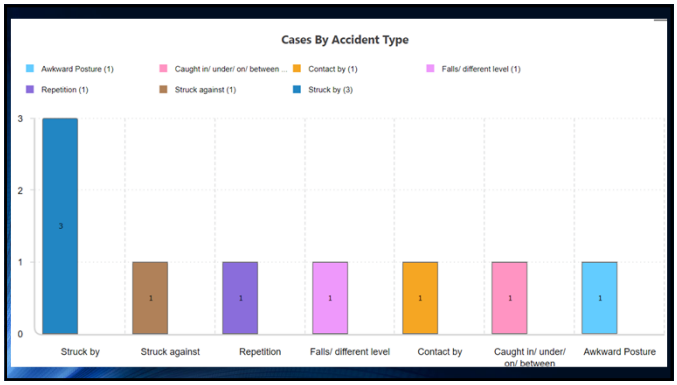
20


Cases By Employee Occupation
Process Technician (2)
Production Sanitation Utility ...
Production Utility (1)
9
8
7
6
5
4
3
2
1
0
9
2
1
Production Sanitation Utility
Process Technician
Production Utility
Total number of records evaluated = 12.

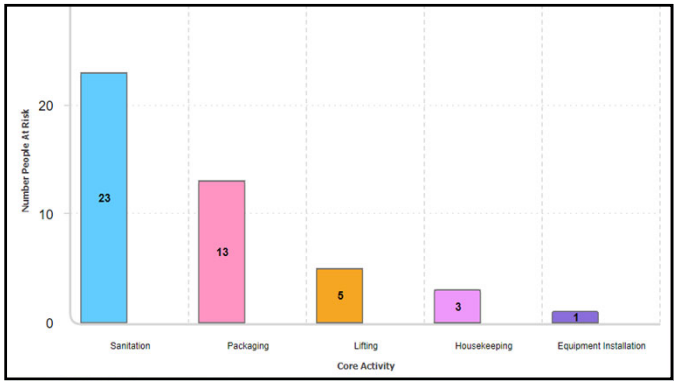
21


Cases By Injury
Abrasion/ Scratches (superfici...
Contusion/ Bruise (5)
Laceration/ Cut/ Open Wound (1...
Strain (2)
5
4
3
2
1
0
5
2
1
1
Contusion/ Bruise
Strain
Laceration/ Cut/ Open Wound
Abrasion/ Scratches (superficial)
Total number of records evaluated = 9.

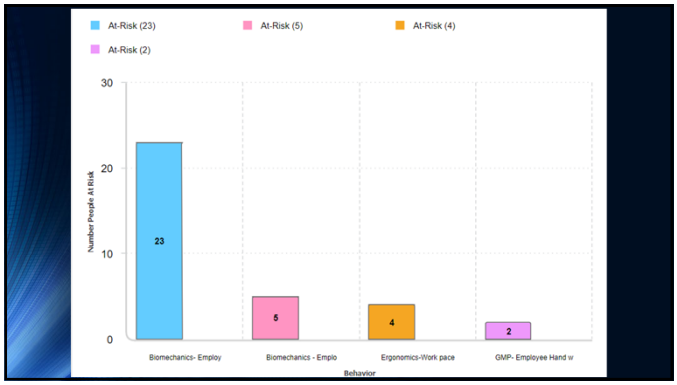
22


Cases By Accident Type
Awkward Posture (1)
Caught in/ under/ on/ between ...
Contact by (1)
Falls/ different level (1)
Repetition (1)
Struck against (1)
Struck by (3)
3
2
1
0
3
1
1
1
1
1
1
Struck by
Struck against
Repetition
Falls/ different level
Contact by
Caught in/ under/ on/ between
Awkward Posture

23


Number People At Risk
20
10
0
23
13
5
3
1
Sanitation
Packaging
Lifting
Housekeeping
Equipment Installation
Core Activity

24



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Data provided focus

- Employees with 1-5 years of tenure, conducting sanitation on fourth shift had a statistically significant higher rate of contusions to the hands and fingers as a result of contact against/by/between machine parts while moving and cleaning mobile equipment.

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Don't forget to ask the experts

- Employees always know the worst job, find out why
- Internal or hired PT or OT
  - Symptom trends can indicate risk
  - Catch employees on the production floor where early intervention and conservative treatment options still have time to work.
- Show and tell with your external medical community

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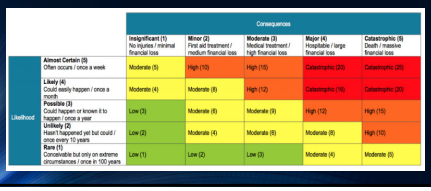
Quantify the Risk – Risk Assessment Process

- Choose an appropriate risk assessment tool
- Use to validate data
- Use to measure change improvement
- Use to tell your story



		Consequences				
		Insignificant (1) No injuries / minimal financial loss	Minor (2) First aid treatment / medium financial loss	Moderate (3) Medical treatment / high financial loss	Major (4) Hospitalize / large financial loss	Catastrophic (5) Death / massive financial loss
Likelihood	Almost Certain (5) Often occurs / once a week	Moderate (5)	High (10)	High (15)	Catastrophic (20)	Catastrophic (25)
	Likely (4) Could easily happen / once a month	Moderate (4)	Moderate (8)	High (12)	Catastrophic (16)	Catastrophic (20)
	Possible (3) Could happen or known it to happen / once a year	Low (3)	Moderate (6)	Moderate (9)	High (12)	High (15)
	Unlikely (2) Hasn't happened yet but could / once every 10 years	Low (2)	Moderate (4)	Moderate (6)	Moderate (8)	High (10)
	Rare (1) Conceivable but only on extreme circumstances / once in 100 years	Low (1)	Low (2)	Low (3)	Moderate (4)	Moderate (5)

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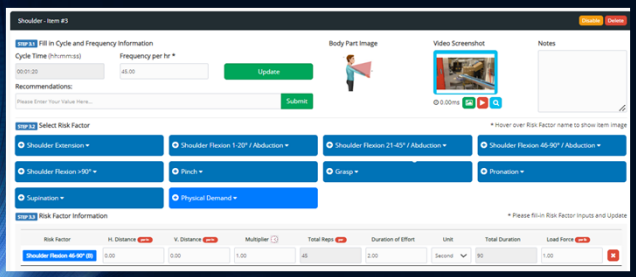
Z-EBRA



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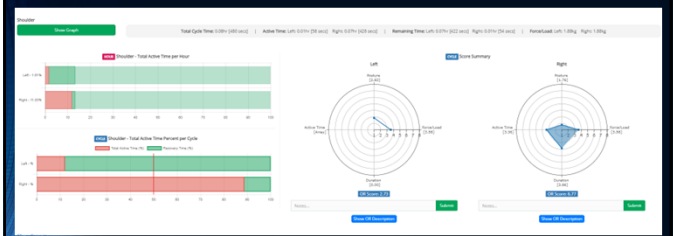
Z-EBRA



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Other Specific Sources of Risk Data

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NIOSH Lifting Equation

1.3. The Equation and Its Function

The revised lifting equation for calculating the Recommended Weight Limit (**RWL**) is based on a multiplicative model that provides a weighting for each of six task variables. The weightings are expressed as coefficients that serve to decrease the load constant, which represents the maximum recommended load weight to be lifted under ideal conditions. The **RWL** is defined by the following equation:

RWL = LC X HM X VM X DM X AM X FM X CM

Where:

		METRIC	U.S. CUSTOMARY
Load Constant	LC	23 kg	51 lb
Horizontal Multiplier	HM	(25/H)	(10/H)
Vertical Multiplier	VM	1-(.003|V-75|)	1-(.0075|V-30|)
Distance Multiplier	DM	.82 + (4.5/D)	.82 + (1.8/D)
Asymmetric Multiplier	AM	1-(.0032A)	1-(.0032A)
Frequency Multiplier	FM	From Table 5	From Table 5
Coupling Multiplier	CM	From Table 7	From Table 7

- Best Use: General lifting Assessment tool. Tasks that have history of low back injuries. Foundation research for all other tools.
- Limitations: Only used for two-handed lifts. Only addresses low back pain/injuries. Does not apply to very slippery floors, work over 8-hours, high-speed motion.
- https://wonder.cdc.gov/wonder/prevguid/p0000427/p0000427.asp

Risk Assessment

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Moore-Garg Strain Index

Moore-Garg Strain Index

Task | Analyst | Date

Strain Index	Final rating for each risk factor and multiply these together	SI < 3: Safe SI between 3 and 5: Uncertain SI between 5 and 7: Some Risk SI > 7: Hazardous		
Risk Factor	Rating Criterion	Observation	Ratings	Left / Right
Intensity of Exertion (Borg Scale values in brackets)	Light	Barely noticeable or minimal effort [0-2]	1	
	Somewhat Hard	Noticeable or definite effort [3]	3	
	Hard	Obvious effort, Unchanged expression [4-5]	6	
	Very Hard	Substantial effort, Changed expression [6-7]	9	
	Near Maximal	Uses shoulder or trunk for force [8-10]	13	
Duration of Exertion (% of Cycle)	< 10%		0.5	
	10-29%		1.0	
	30-49%		1.5	
	50-79%		2.0	
	> 80%		3.0	
Efforts Per Minute	< 4		0.5	
	4 - 8		1.0	
	9 - 14		1.5	
	15 - 19		2.0	
	> 20		3.0	
Hand/ Wrist Posture	Very Good	Perfectly Neutral	1.0	
	Good	Near Neutral	1.0	
	Fair	Non-Neutral	1.5	
	Bad	Marked Deviation	2.0	
	Very Bad	Near Extreme	3.0	
Speed of Work	Very Slow	Extremely relaxed pace	1.0	
	Slow	Taking one's own time	1.0	
	Fair	Normal speed of motion	1.0	
	Fast	Rushed, but able to keep up	1.5	
	Very Fast	Rushed and barely/unable to keep up	2.0	
Duration of Task Per Day (hours)	< 1		0.25	
	1 - 2		0.50	
	2 - 4		0.75	
	4 - 8		1.00	
	> 8		1.50	

Best use: Upper extremity neuromuscular and MSD involving elbow, wrist and hand, e.g. Carpal Tunnel Syndrome, DeQuervain's Syndrome, Radial Tunnel Syndrome, Cubital Tunnel Syndrome, Epicondylitis, Tendonitis, Tenosynovitis

Limitations: Tasks with excessive hand tool vibration
Tasks with high contact stress
3/6 measures are subjective

J. Steven Moore and Arun Garg. The Strain Index: A proposed method to analyze jobs for risk of distal upper extremity disorders; *Am. Ind. Hyg. Assoc. J.* 56:443-458, 1995.

Risk Assessment

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ACGIH Hand TLV

Estimation of Normalized Peak Force for Hand Forces

%MVC	Subjective Scale Score	Subjective Scale Verbal Anchor	Moore-Garg Observer Scale (Alternative Method)	NPF
0	0	Nothing at all		0
5	0.5	Extremely Weak (Just Noticeable)	Barely Noticeable or Relaxed Effort	0.5
10	1	Very Weak		1
20	2	Weak (Light)	Noticeable or Definite Effort	2
30	3	Moderate		3
40	4		Obvious Effort, But Unchanged Facial Expression	4
50	5	Strong (Heavy)		5
60	6		Substantial Effort with Changed Facial Expression	6
70	7	Very Strong		7
80	8			8
90	9		Uses Shoulder or Truck for Force	9
100	10	Extremely Strong (almost maximum)		10

Hand Activity Level Rating

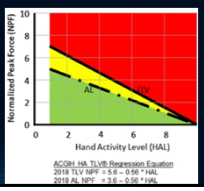
0	2	4	6	8	10
Hands idle most of the time; no regular exertions	Consistent conspicuous long pauses; or very slow motions	Slow steady motion/exertions; frequent brief pauses	Steady motion/exertion; infrequent pauses	Rapid steady motion/exertions; no regular pauses	Rapid steady motion/difficulty keeping up or continuous motion

Hand TLV = NPF/(10 – HAL)

Best use: High repetition wrist and hand movements, e.g. Carpal Tunnel Syndrome, DeQuervain's Syndrome, Radial Tunnel Syndrome, Cubital Tunnel Syndrome

Limitations: Tasks with excessive hand tool vibration
Tasks with high contact stress
3/6 measures are subjective

J. Steven Moore and Arun Garg, The Strain Index: A proposed method to analyze jobs for risk of distal upper extremity disorders; *Am. Ind. Hyg. Assoc. J.* 56:443-458, 1995.



Risk Assessment

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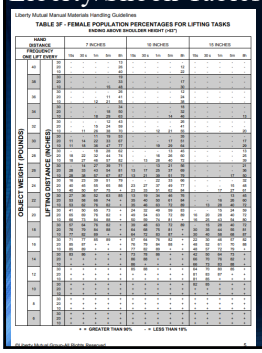
Liberty/Snook Tables



Best use: General use for manual material handling tasks, including pushing, pulling and carrying. Gender, force, posture and frequency specific. Great all around use.

Limitations: Risk is measured in percent of population that can perform task with low risk.

https://libertymmhtables.libertymutual.com/CM_LMTablesWeb/taskSelection.do?action=initTaskSelection

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Risk Assessment

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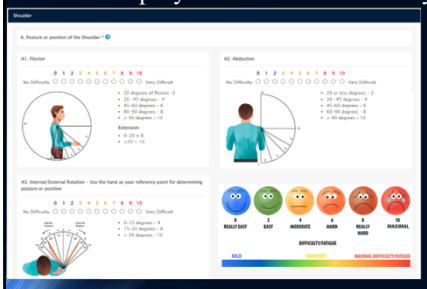
EPDA – Employee Perceived Difficulty Assessment



- Best Uses: General Whole Body Assessment tool. Index points to highest risk body part.
- Great tool to compare tasks to each other to prioritize work and to uncover tasks that are more difficult for an anthropometric demographic
- Limitations: Largely Subjective

Risk Assessment

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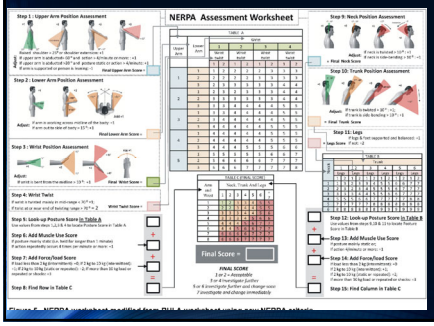
NERPA – Novel Ergonomic Posture Assessment



- Best Use: Tasks with posture concerns, office ergonomics and light assembly with low force and low repetition
- Limitations: High force tasks especially coupled with repetition, somewhat subjective, does not address duty-cycle (DC) duration
- Battle tested with ACGIH as a much more reliable tool than RULA and REBA. Better at identifying jobs that have no risk, better at evaluating changes.
- ISO 11228 Standard

Risk Assessment

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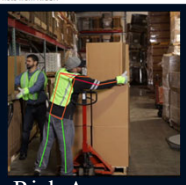
New Technology

- Wearable sensors
  - Posture
  - Motion sensors
  - Accelerometers
  - Neurotech
  - Environmental Conditions
- A.I. & Vision Software – TuMeke
- Augmented and Virtual Reality
- Advanced Data Analytics
- Exoskeletons
  - Active and passive
  - Some provide tactile feedback
  - Be Careful!



Risk Assessment

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I've got all this data….

Now what?

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Prioritizing the Work

- PDCA Cycle Begins Here
  - Use the data to look at specific tasks
  - Have Engineering and Safety staff work directly with employees to brainstorm ideas
  - Log ALL ideas in a spreadsheet
  - Use RA Model to anticipate risk reduction before deciding on an actionable idea.
- PACE Chart
  - Compares ideas against each other relative to risk reduction and ease of implementation

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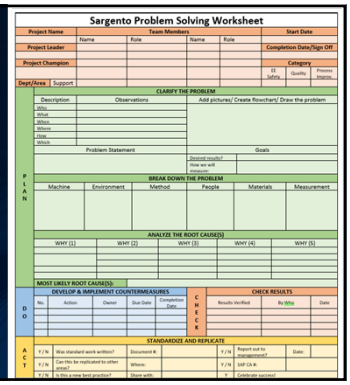
Solve the Problem

Use the data to assist in define and analyze the problem.

It is important that the data drives the development of solution ideas.

Root Cause Analysis will sharpen the focus and get you working on the RIGHT problem.



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PACE Chart Summary

PACE Chart Index

Priority Project Number	Dept	Project	Hazard Abated/Project benefit	Project Cost Cost of Completed Project	Acton Level	Owner	Next Steps	Project Status
1	13	Klick Lok Master Carton Case Lift	Eliminated over shoulder lifting to load box machine on Main West	$6,700	1	Mary and Nicky	Phil work with Main line folks form a formal team, kick off by 3/1/12.	COMPLETED Lift delivered March 8, project implementation completed March 9.
5	99	Centralized Casings Barrel Lift	Eliminate bending and reaching into barrels to remove bags of casings.	24,500	1	Kevin	Kevin Meanor researching lifts	
7	74	Roof Edge Fall Protection Enhancements	Eliminate fall hazard	$3,500	1	Joe	Measuring roof line needs.	COMPLETED Railing delivered August 1, installed August 14. Pins need placement
9	11	Walking Pavers on Roof	Eliminate fall hazard	$2,000	1	Andy	Stan taking measurements and Renee Resch plotting on CAD for facility roof layout to understand how many pavers are needed.	Project on HOLD for time being, approximately 100' of walking path complete to this point. Need to do more, approx $6,000 left
19	60	Repair Film Lifts	Eliminate over shoulder lift of film	$500	1	Bill		COMPLETED - Bill followed up with TeamLeaders verified all working correctly, re educated TLs on etting maintenance involved.
		Breakfast - Extend Top Rail of Infeed Belt Closer To	Reduce reach and bending at waist to				Working with Breakfast Stuffers and Alaark to complete design. Final Design approved by teams April 19, submitted to Alaark for	COMPLETED -Belts received, Sunrise project setup will conclude week of August 25,

Track Progress, Project Owners, Costs and Timelines

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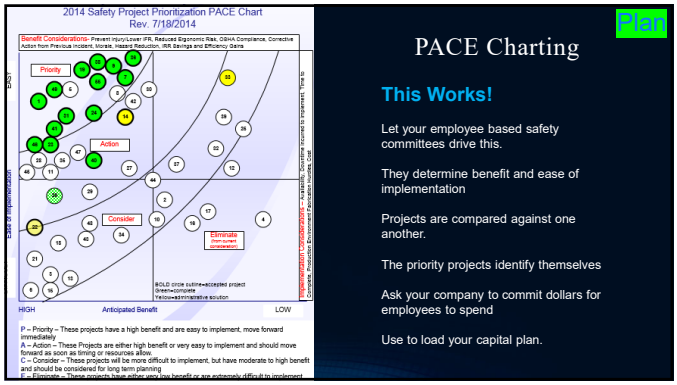

Plan

PACE Charting

This Works!

Let your employee based safety committees drive this.

They determine benefit and ease of implementation

Projects are compared against one another.

The priority projects identify themselves

Ask your company to commit dollars for employees to spend

Use to load your capital plan.

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Final Plan Summary from our Injury Problem

- Test all mobile equipment for push/pull forces needed to move
- Replace casters where necessary
- Purchase an electric tugger for large equipment
- Engineer parts hangers to free up both hands for cleaning
- Develop standard work process for moving machinery and train

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Do

- Implement the ideas that are likely to have the highest impact.
- Set up small test pilots if possible.
- This is a test for effectiveness and ineffectiveness.
  - Minimize resource loss if ineffective
- Re-assess risk in real time to confirm assumptions.
- Gather data

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Implementation Pilot

- Used push/pull meter to measure forces before and after caster change for a variety of casters, choose best casters based on data.
- Used a loaned tugger from another plant to trial with different pieces of large equipment.
- Fabricated test carts with hangers to place and secure machine parts so employees could use both hands

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Check

- Evaluate data to compare to your success criteria.
- Make small tweaks to processes to refine efficiency and remove chance of error.
- Quantify the benefits of the change

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Check results

- One type of caster from Blickle required 30% less force to move machines.
- Tugger saved time and reduced necessary labor for what was a 2-3 person task.
- Parts cart improved cleaning efficiency and productivity, employee had additional time to use elsewhere. Employees gave feedback to maintenance fabricator to modify carts for easy parts storage.

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Act – Our Standardization Plan

- Institutionalize the change
  - Purchased casters and created a bi-annual PM to verify condition
  - Placed order to fabricate additional parts carts
  - Purchased dedicated tugger for heavy machinery
- Determine where there may be other areas that would benefit
  - Shared findings with other plants, solutions implemented
  - Determined that parts carts could be used by Maintenance to conduct more efficient PMs because machine re-assembly was faster, ad parts did not walk away.
- Create Standard Work documentation
  - Created a standard work document and trained employees
  - Created an audit and behavior observation form to ensure process remained in tact

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Create Ergonomic Standard Work

- Use PDA and Risk Assessment Data to target specific task components
- Create a training document to include in the task Work Instructions
- Communicate risks to employees
- Provide simple solutions and expectations
- Give them tools for warm-up and stretch
- Use as an auditing tool

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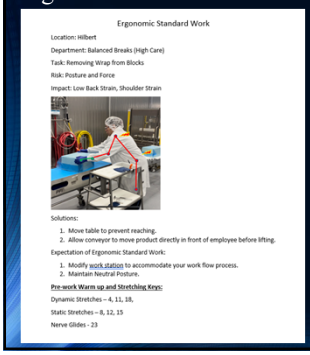
Ergonomic Standard Work



Ergonomic Standard Work

Location: Hilbert

Department: Balanced Breaks (High Care)

Task: Removing Wrap from Blocks

Risk: Posture and Force

Impact: Low Back Strain, Shoulder Strain

Solutions:

1. Move table to prevent reaching.
2. Allow conveyor to move product directly in front of employee before lifting.

Expectation of Ergonomic Standard Work:

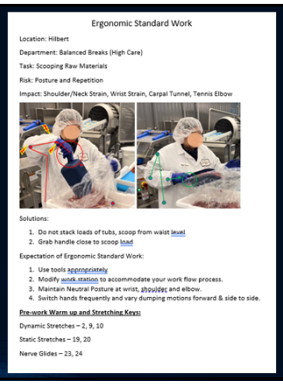
1. Modify work station to accommodate your work flow process.
2. Maintain Neutral Posture.

Pre-work Warm up and Stretching Keys:

Dynamic Stretches – 4, 11, 18,

Static Stretches – 8, 12, 15

Nerve Glides - 23



Ergonomic Standard Work

Location: Hilbert

Department: Balanced Breaks (High Care)

Task: Scooping Raw Materials

Risk: Posture and Repetition

Impact: Shoulder/Neck Strain, Wrist Strain, Carpal Tunnel, Tennis Elbow

Solutions:

1. Do not stack loads of tubs, scoop from waist level
2. Grab handle close to scoop load

Expectation of Ergonomic Standard Work:

1. Use tools appropriately
2. Modify work station to accommodate your work flow process.
3. Maintain Neutral Posture at wrist, shoulder and elbow.
4. Switch hands frequently and vary dumping motions forward & side to side.

Pre-work Warm up and Stretching Keys:

Dynamic Stretches – 2, 9, 10

Static Stretches – 19, 20

Nerve Glides – 23, 24

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Wrapping it up - Don't Bite Off Too Much

- Don't solve the macro-problem
- Plan on implementing many small incremental changes….
- Why?
  - They are less expensive
  - They are done more quickly
  - They are visible
  - They build momentum
  - They show urgency and value to management

"To bite off more than you can chew"

To attempt to take on a something that is too much for you to handle.

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Small Changes that have Large Impact

- Job Rotation scheduling
- Job Enlargement (increases operational flexibility)
- Stretching Programs (Voluntary or Prescribed)
- PT Symptom Surveys and coaching
- Pallet lifts and turntables
- Anti-vibration/grip gloves
- Housekeeping
- Tool Sharpening program

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Plan

- What is the real cause of the problem?
- What are the current procedures and processes involved in the task?
- What resources will we need to make changes?
- Who are all of the stakeholders and decision makers?
- What barriers need to be removed to make changes?
- What is the timeline we need to meet?
- What does success look like?
- What potential solutions should we try?

- Slow down and answer all of these questions before moving on

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The End Game

- Continuous process of improvement
- Watch for relapses
  - Inspect what you expect
  - Develop audits that verify sustainability
- Set your wedges (Standard Work)
  - Leadership needs to support and communicate expectations

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Summary - Using a Process/Systems Approach

- An effective ergonomics program is hands-on and data driven.
- It needs to live through your employees.
- Taking a process approach gives your ergonomics program life and builds momentum for a strong safety culture.
- Choose your weapons and become experts in their use
  - (DMAIC, Fishbone, Hoshin Kanri, Gemba Walks, Standard Work, 5Whys, A3).
- Change is the norm and the whole point.
- Make change visible to all and be loud about it.

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Questions?

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