

TRENDS AND TECHNOLOGY IN WORKPLACE INJURY PREVENTION

RHSFA Conference

Monday September 30th, 2019

Presented by :

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Preventing Work-Related Injuries is Top of Mind For Employers

- The economy is pumping, and employers need every able-bodied worker to produce
- Employers are looking to prevent employees from getting injured
- An aging workforce is creating a need for outside the box ideas to prevent injuries
- Musculoskeletal injuries are by far the highest cost of all workplace injuries
- Due to ballooning healthcare costs, employers are interested in being proactive instead of reactive



Reducing Group Health Insurance Burden and Maintaining Employee Health is Also Top of Mind for Employers

- Healthcare cost continued to rise for both the employee and employer
- Employees have deductibles, co-insurance, and out of-pocket expenses
- Employers want to maintain healthy workers, so they stay productive
- Employees do not seek care for aches and pains because they would have to take time off work and it is inconvenient
- Tough guy/gal syndrome! “I will live with it.” Then it gets worse and worse until they need surgery or are disabled.



Common Injury Prevention Solutions

- Onsite Injury Prevention
- Post Offer Employment Testing
- Ergonomic Evaluation
- Stretching and Wellness Programs



Innovative Injury Prevention Solutions

- Wearable Technology
- Near-Site Injury Prevention Services
- Rapid Rehab Response



What is Injury Prevention First Aid?

Source: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9638&p_table=STANDARDS

1904.7(b)(5)(i)

What is the definition of medical treatment? "Medical treatment" means the management and care of a patient to combat disease or disorder. For the purposes of Part 1904, medical treatment does not include:

1904.7(b)(5)(i)(A)

Visits to a physician or other licensed health care professional solely for observation or counseling;

1904.7(b)(5)(i)(B)

The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or

1904.7(b)(5)(i)(C)

"First aid" as defined in paragraph (b)(5)(ii) of this section.

1904.7(b)(5)(ii)

What is "first aid"? For the purposes of Part 1904, "first aid" means the following:

1904.7(b)(5)(ii)(A)

Using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes);

What is Injury Prevention First Aid?

1904.7(b)(5)(ii)(B)

Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);

1904.7(b)(5)(ii)(C)

Cleaning, flushing or soaking wounds on the surface of the skin;

1904.7(b)(5)(ii)(D)

Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™ (other wound closing devices such as sutures, staples, etc., are considered medical treatment);

1904.7(b)(5)(ii)(E)

Using hot or cold therapy;

1904.7(b)(5)(ii)(F)

Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes);

1904.7(b)(5)(ii)(G)

Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.).

What is Injury Prevention First Aid?

[1904.7\(b\)\(5\)\(ii\)\(H\)](#)

Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

[1904.7\(b\)\(5\)\(ii\)\(I\)](#)

Using eye patches;

[1904.7\(b\)\(5\)\(ii\)\(J\)](#)

Removing foreign bodies from the eye using only irrigation or a cotton swab;

[1904.7\(b\)\(5\)\(ii\)\(K\)](#)

Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;

[1904.7\(b\)\(5\)\(ii\)\(L\)](#)

Using finger guards;

[1904.7\(b\)\(5\)\(ii\)\(M\)](#)

Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes);

or

[1904.7\(b\)\(5\)\(ii\)\(N\)](#)

Drinking fluids for relief of heat stress.

What is Injury Prevention First Aid?

1904.7(b)(5)(iii)

Are any other procedures included in first aid? No, this is a complete list of all treatments considered first aid for Part 1904 purposes.

1904.7(b)(5)(iv)

Does the professional status of the person providing the treatment have any effect on what is considered first aid or medical treatment? No, OSHA considers the treatments listed in § 1904.7(b)(5)(ii) of this Part to be first aid regardless of the professional status of the person providing the treatment. Even when these treatments are provided by a physician or other licensed health care professional, they are considered first aid for the purposes of Part 1904. Similarly, OSHA considers treatment beyond first aid to be medical treatment even when it is provided by someone other than a physician or other licensed health care professional.

Source: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9638&p_table=STANDARDS

NUTS AND BOLTS OF INJURY PREVENTION

- Wearable Technology company wide to reduce hazardous movements
- Employee reports the early signs of a musculoskeletal disorder
- A trained and certified injury prevention specialist performs a full orthopedic evaluation on the employee
 - Physical Therapy - Occupational Therapy - Athletic Trainer
 - Determines if the symptoms are minor or require medical treatment
 - If minor sees the employee and provides OSHA first aid
- When on-site, performs immediate ergonomic analysis
- Implements wearable technology
- Non Work Related includes full Physical Therapy or Occupational Therapy
- Full duty work within 6 to 9 thirty minute visits

On-Site Injury Prevention

- A therapist located on-site performs OSHA approved musculoskeletal first aid
- Common algorithm is for every 100 employees the therapist is on site for 2 hours per week
- The therapist goes out and looks at the employee's job to make immediate ergonomic improvements
- Wearable technology is implemented
- The therapist sees the employee for 6 to 9 and 50% to 75% of work-related injuries will disappear.

OCCUCARE Dashboard Injury Prevention Job Descriptions Ergonomic Summaries Account: Sample Company

Edit Symptom Recognition Checklist

Employee: David Dinkins Department: Re-Pack
Shift: 2nd Shift Supervisor: Joe Miller
Job Title: Repack Selector Station: Select Station

Length of Employment
Years: 0 Months: 8

Employment Type: Part Time Full Time

Work Level: Light Duty Full Duty Off Work

Do you feel this incident/symptom is work related? Yes
How long have you been in that position? _____

OSHA Recordable? Yes No

No
 Aggravated a non-work injury
 Unsure

Date of Incident: 01/23/2019

Please describe the incident that caused this symptom
He reports experiencing left foot heel pain over the last 3-4 months. He reports no incident, but feels it's work related.

Please describe the incident that caused this symptom
He reports experiencing left foot heel pain over the last 3-4 months. He reports no incident, but feels it's work related.

Check the area(s) of the body that is affected by the symptom(s) *

Right: Shoulder Elbow/Forearm Hand/Wrist Fingers Thigh/Knee Ankle/Foot
 Right Hip

Left: Shoulder Elbow/Forearm Hand/Wrist Fingers Thigh/Knee Ankle/Foot
 Left Hip Neck Upper Back Lower Back

Please check the words that best describe your symptom(s) *

<input type="checkbox"/> Aching	<input type="checkbox"/> Burning	<input type="checkbox"/> Tenderness	<input type="checkbox"/> Sharp Pain	<input type="checkbox"/> Numbness	<input type="checkbox"/> Tingling
<input type="checkbox"/> Swelling	<input type="checkbox"/> Stiffness	<input type="checkbox"/> Weakness	<input type="checkbox"/> Pale Skin Color	<input type="checkbox"/> Cramping	<input type="checkbox"/> Soreness
<input type="checkbox"/> Tightness	<input type="checkbox"/> Pinching	<input checked="" type="checkbox"/> Throbbing	<input type="checkbox"/> Pain	<input type="checkbox"/> Other	<input type="checkbox"/> N/A

How long has it been since you first noticed the symptom(s) *
3 Months

How often do (does) the symptom(s) occur? *
 Sometimes Often Constant N/A

How long does each symptom occurrence last? *
 Seconds Minutes Hours Days Weeks Months

When is the symptom(s) at its worst? *

<input type="checkbox"/> Sitting	<input type="checkbox"/> Standing	<input checked="" type="checkbox"/> Walking	<input type="checkbox"/> Driving	<input type="checkbox"/> Sleeping	<input type="checkbox"/> Lifting
<input type="checkbox"/> Carrying	<input type="checkbox"/> Pushing	<input type="checkbox"/> Pulling	<input type="checkbox"/> Bending	<input type="checkbox"/> Squatting	<input type="checkbox"/> Kneeling
<input type="checkbox"/> Crawling	<input type="checkbox"/> Stair Climbing	<input type="checkbox"/> Ladder Climbing	<input type="checkbox"/> Reaching	<input type="checkbox"/> Grasping	<input type="checkbox"/> Pinching
<input type="checkbox"/> N/A					

How uncomfortable would you rate your symptom(s)? *
Now 0 (No Symptom) 1 2 3 4 5 6 7 8 9 10 (Unbearable)

In the first 8 months on-site, OccuCare Therapists have seen 56 employees:
8 Work Related (14%) 48 Non-Work Related (86%)

Potential Company Exposure

Assuming 15% of work/non-work related aches or pains would have progressed to medical treatment

Work Related Aches

\$5,694.00

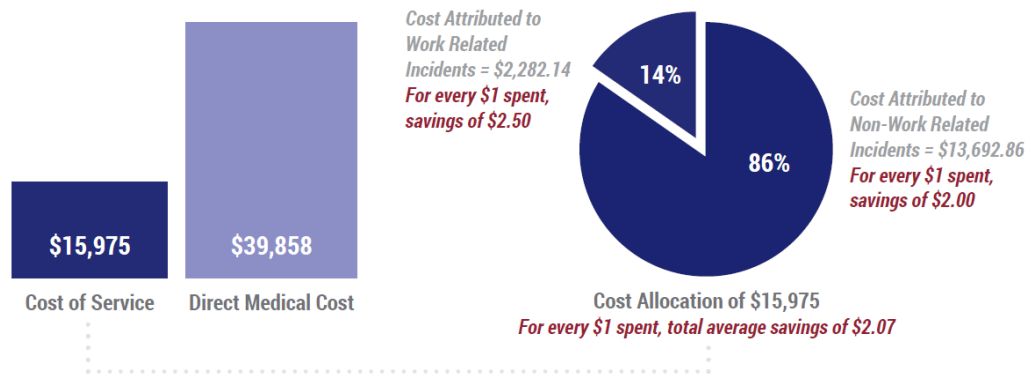
Direct Medical Cost

Non-Work Related Aches

\$34,164.00

Direct Medical Cost

According to OSHA's Safety Pays, average costs of typical MSD physician related visits, diagnostics, and 10 physical therapy visits, the average cost of MSD is \$4,745.



Employee Benefit

Average Discomfort Employees Came in With: 3.98/10 on discomfort scale

Average Amount of Visits to On-Site Therapist: 2.5 visits

Discomfort After Visits: 2.7/10 on discomfort scale

Decrease in Discomfort: 31%

Near-Site Injury Prevention

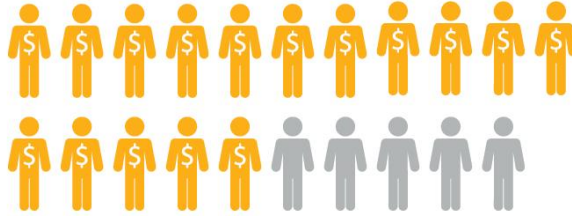
- Employer uses an online injury prevention requesting system and a near site visit can happen anywhere throughout the US
- A therapist located off/near-site sees the employee, is provided a full orthopedic evaluation and provided OSHA First Aid
- Visits are simple 30-minute sessions and seen 2 to 3 times per week with invoice sent directly to employer for service
- Clinic needs to be trained and certified to perform this type of service.
- The clinic has to have a custom documentation system and should refrain from documenting in their electronic medical records system
- The employee returns to full duty work within 6 to 9 visits



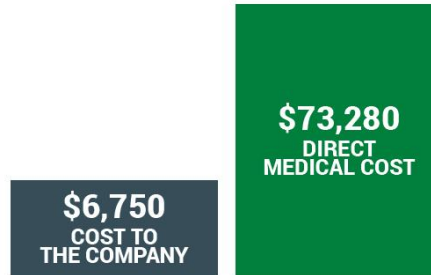
NEAR-SITE INJURY PREVENTION

OccuCare Near-Site Therapists have seen 21 total employees at a mid to large-sized food distribution company in Wisconsin.

21 EMPLOYEES felt their symptoms were work related.
16 EMPLOYEE cases were stopped from becoming OSHA recordable, through near-site injury prevention.



Conservatively assuming \$4,580 direct costs per recordable



76% of employees, seen in an average of 2.1 visits, did not become a recordable.

For every **\$1** spent with OccuCare, the company saved over **\$10.86**

2018 Total Direct Medical Costs: \$1.2 million

2019 Total Direct Medical Costs: \$363,000

Rapid Rehab Response Injury Prevention

- The employer uses an online injury prevention requesting system and a therapist is requested.
- Therapist comes on-site within 24 hours, performs a full orthopedic evaluation, and performs OSHA first aid
- The therapist goes out to look at the job ergonomically and implements wearable technology
- Visits are simple 30-minute sessions and seen 2 to 3 times per week with invoice sent directly to employer
- The employee returns to full duty work within 6 to 9 visits

Edit Symptom Recognition Checklist

Employee: David Dixon | Department: Pa-Pack | Shift: 2nd Shift | Supervisor: Joe Miller | Job Title: Repair Selector | Station: Select Station

Length of Employment: Years: 0 | Months: 8

Employment Type: Part Time Full Time

Work Level: Light Duty Full Duty Off Work

Do you feel this incident/symptom is work related? Yes

How long have you been in that position? _____

OSHA Recordable? Yes No

Date of Incident: 01/23/2019

Please describe the incident that caused this symptom: He reports experiencing left foot heel pain over the last 3-4 months. He reports no incident, but feels it's work related.

Please describe the incident that caused this symptom: He reports experiencing left foot heel pain over the last 3-4 months. He reports no incident, but feels it's work related.

Check the area(s) of the body that is affected by the symptom(s):

<input type="checkbox"/> Right Shoulder	<input type="checkbox"/> Elbow/Forearm	<input type="checkbox"/> Hand/Wrist	<input type="checkbox"/> Fingers	<input type="checkbox"/> Thigh/Knee	<input type="checkbox"/> Ankle/Foot
<input type="checkbox"/> Right Hip	<input type="checkbox"/> Elbow/Forearm	<input type="checkbox"/> Hand/Wrist	<input type="checkbox"/> Fingers	<input type="checkbox"/> Thigh/Knee	<input checked="" type="checkbox"/> Ankle/Foot
<input type="checkbox"/> Left Shoulder	<input type="checkbox"/> Elbow/Forearm	<input type="checkbox"/> Hand/Wrist	<input type="checkbox"/> Fingers	<input type="checkbox"/> Thigh/Knee	<input type="checkbox"/> Ankle/Foot
<input type="checkbox"/> Left Hip	<input type="checkbox"/> Elbow/Forearm	<input type="checkbox"/> Hand/Wrist	<input type="checkbox"/> Fingers	<input type="checkbox"/> Thigh/Knee	<input type="checkbox"/> Ankle/Foot
<input type="checkbox"/> Neck	<input type="checkbox"/> Upper Back	<input type="checkbox"/> Lower Back			

Please check the words that best describe your symptom(s):

<input type="checkbox"/> Aching	<input type="checkbox"/> Burning	<input type="checkbox"/> Tenderness	<input type="checkbox"/> Sharp Pain	<input type="checkbox"/> Numbness	<input type="checkbox"/> Tingling
<input type="checkbox"/> Swelling	<input type="checkbox"/> Stiffness	<input type="checkbox"/> Weakness	<input type="checkbox"/> Pink Skin Color	<input type="checkbox"/> Chapping	<input type="checkbox"/> Swelling
<input type="checkbox"/> Tightness	<input type="checkbox"/> Pinching	<input checked="" type="checkbox"/> Throbbing	<input type="checkbox"/> Pain	<input type="checkbox"/> Other	<input type="checkbox"/> N/A

How long has it been since you first noticed the symptom(s): 3 Months

How often do (does) the symptom(s) occur?: Often Constant N/A

How long does each symptom occurrence last?: Hours Seconds Minutes Days Weeks Months N/A

When is the symptom(s) at its worst?:

<input type="checkbox"/> Sitting	<input type="checkbox"/> Standing	<input checked="" type="checkbox"/> Walking	<input type="checkbox"/> Driving	<input type="checkbox"/> Sleeping	<input type="checkbox"/> Lifting
<input type="checkbox"/> Carrying	<input type="checkbox"/> Pushing	<input type="checkbox"/> Pulling	<input type="checkbox"/> Bending	<input type="checkbox"/> Squatting	<input type="checkbox"/> Kneeling
<input type="checkbox"/> Crawling	<input type="checkbox"/> Steeple Climbing	<input type="checkbox"/> Ladder Climbing	<input type="checkbox"/> Reaching	<input type="checkbox"/> Sweeping	<input type="checkbox"/> Picking
<input type="checkbox"/> N/A					

How uncomfortable would you rate your symptom(s)? None 1 2 3 4 5 6 7 8 9 10 Unbearable

RAPID REHAB INJURY PREVENTION

OccuCare Therapists went on-site to see 27 employees at a mid-sized packaging company with facilities in Illinois and Indiana.

27 EMPLOYEES felt their symptoms were work related.
27 EMPLOYEE cases were stopped from becoming OSHA recordable.



Conservatively assuming \$4,580 direct costs per recordable



Based on previous company incidents, assuming 20 cases became recordable, for every **\$1** spent with OccuCare, the company saved over **\$11.31**

Since OccuCare has begun Rapid Rehab, the company has experienced 0 recordables.

WHY ARE EMPLOYERS IMPLEMENTING THESE PROGRAMS

- Typical direct medical cost of a simple injury = \$4,500.00
- Typical cost of an injury prevention visit = \$200.00
 - 6 to 9 visits = \$1,200.00 to \$1,800.00
- Instead of waiting months to get their employees to a musculoskeletal expert they are getting their employees to them within 24 hours
- When performed on-site, having the therapist see their employees who have non work-related aches and pains is a great employee benefit
- For every \$1.00 spent employers are saving between \$2.00 and \$12.00

SoterAnalytics



Matthew Hart Founder of Soter Analytics

My experience on how an organisation can avoid the fear of a wearables program and set themselves up for success

And, brief updates about our projects



Musculoskeletal injuries

Musculoskeletal injuries are the most common and expensive injury category in industry

\$150K

average cost of an injury
(customer data)

\$70M

annual cost for one of
our customers

\$140B

annual workplace
musculoskeletal injury cost*












*USA: \$50B p.a. Source: Journal of Occupational Safety and Ergonomics
EU: €80B p.a. Source: European Agency for Safety & Health at Work
AUS: A\$10B p.a. Source: Safe Work Australia

The pain for our customers

Musculoskeletal injuries occur frequently & add costly disruption to the productivity of organisations

			
Injury	Hospital	Physio	Investigations
			
Recovery	Company vs. Worker's doctor	Retraining	
			
Productivity loss	Rising insurance	Replacement	Lost bonuses

Current solutions try to use observational techniques that are **not scalable** & training methods that are **not engaging**

		
Often Reactive	Difficult to find worker	Time consuming observations
		
Subjective observations	Hawthorne effect	Training is not engaging
		
Short-term improvement	Unable to quantify value	High churn for providers

The challenge with health & safety solutions

It can be very hard to scale as it's so labor intensive



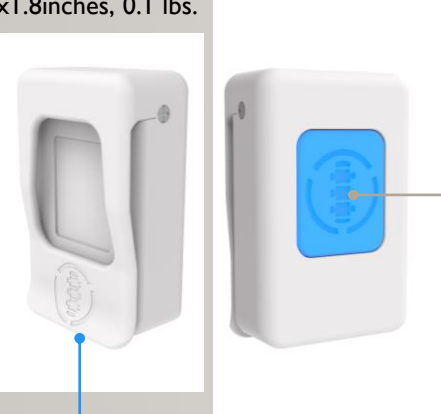
31,281 Occupational health/safety businesses
56,087 Industry employment



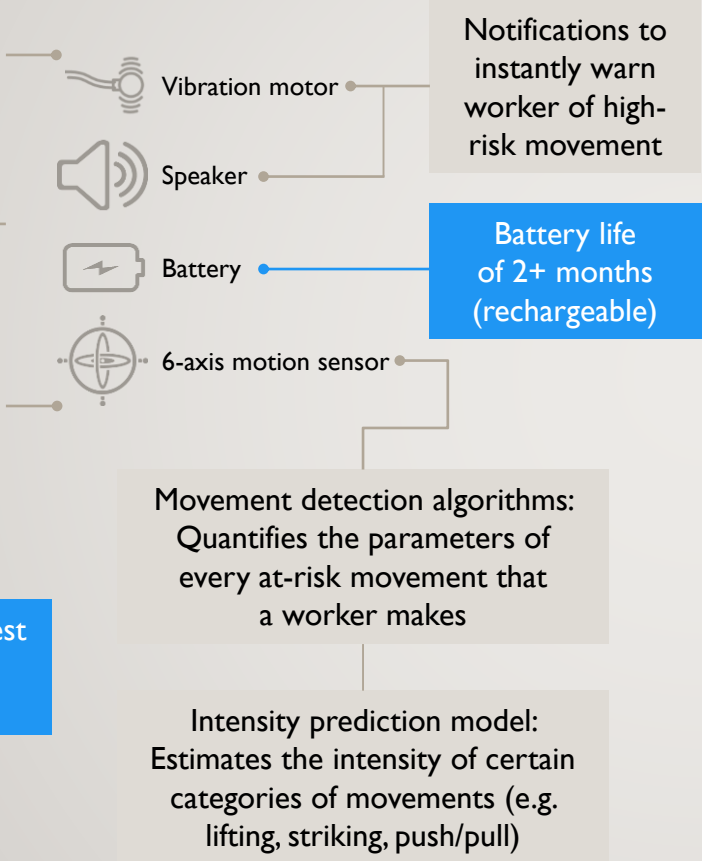
Maybe I can help?

SoterSpine

Dimensions:
2.1x1.8inches, 0.1 lbs.

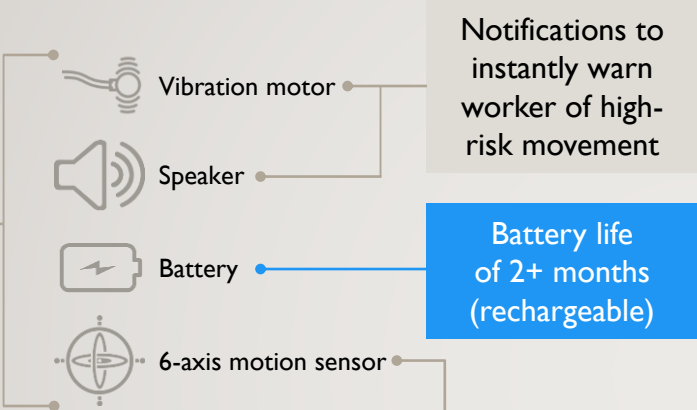
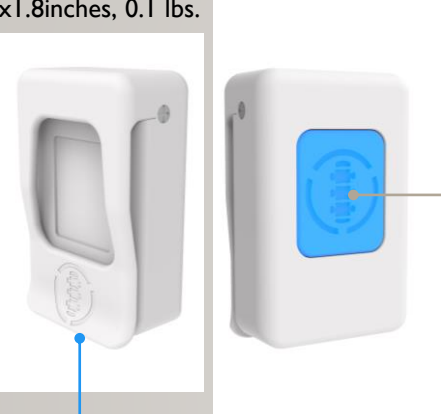


Clipped to any shirt or safety vest
at orientation of choice
(vertically & horizontally)



SoterSpine

Dimensions:
2.1x1.8inches, 0.1 lbs.



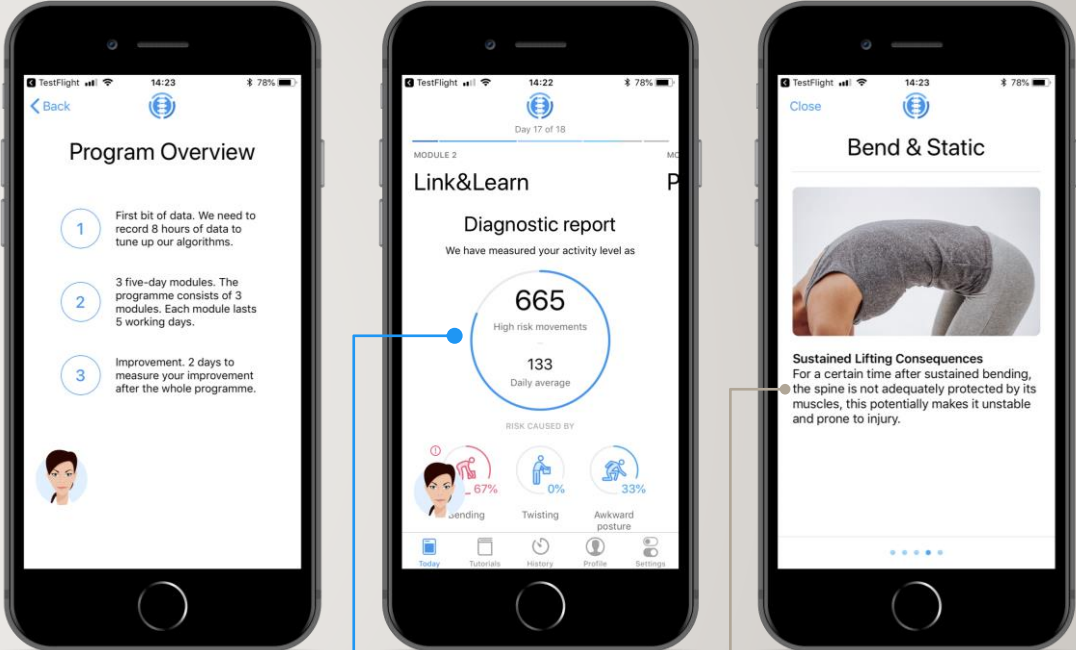
Notifications to instantly warn worker of high-risk movement

Battery life of 2+ months (rechargeable)

Movement detection algorithms: Quantifies the parameters of every at-risk movement that a worker makes

Intensity prediction model: Estimates the intensity of certain categories of movements (e.g. lifting, striking, push/pull)

Clipped to any shirt or safety vest at orientation of choice (vertically & horizontally)



Reporting to highlight and explain what types of high-risk movements the worker is making

Personalised coaching and exercises to improve body and risk awareness



01

Lifting movements with poor technique (primarily sagittal flexion)

02

Overreaching (sagittal flexion)

03

Twisting (rotation of the trunk)

04

Repetitive movements & forces

05

Sustained awkward static postures (including sagittal flexion, sagittal extension, rotation of the trunk & lateral flexion)

06

Sustained & high forces

07

Sudden impact forces

08

Full-body vibrations



01

Lifting movements with poor technique (primarily sagittal flexion)

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Overreaching (sagittal flexion)

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Sudden impact forces

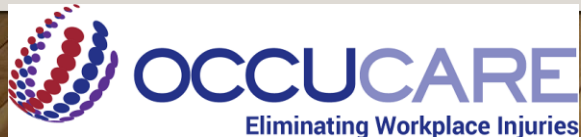
08

Full-body vibrations

30-80%

Amount most workers reduce their number of high-risk movements

USERS INCLUDE



Lesson #1: Don't just use tech because you need to be (seen as) innovative.

Use tech to solve a real problem and try not make new problems

BE OPEN AND TRANSPARENT

Questions we often get asked by the workforce

- Does this track me?
- Do I have to wear this at home?
- Will this be used for performance management?
- “they just want me to work more”

EXPLORE THE DATA MANAGEMENT POLICY

Questions we often get asked by organisations:

- Where is the data stored

EXPLORE THE DATA MANAGEMENT POLICY

Questions we often get asked by organisations:

- Where is the data stored

Questions that should be asked more:

- What's all the data you collect?
- Who has access to the data
- Do you sell the data? What stops you from selling the data? (we don't and never will)
- What's your privacy policy? Read the privacy policy!

Lesson #2: Understand what data is being collected and how it's being used

Put it in a contract that data cannot be sold!

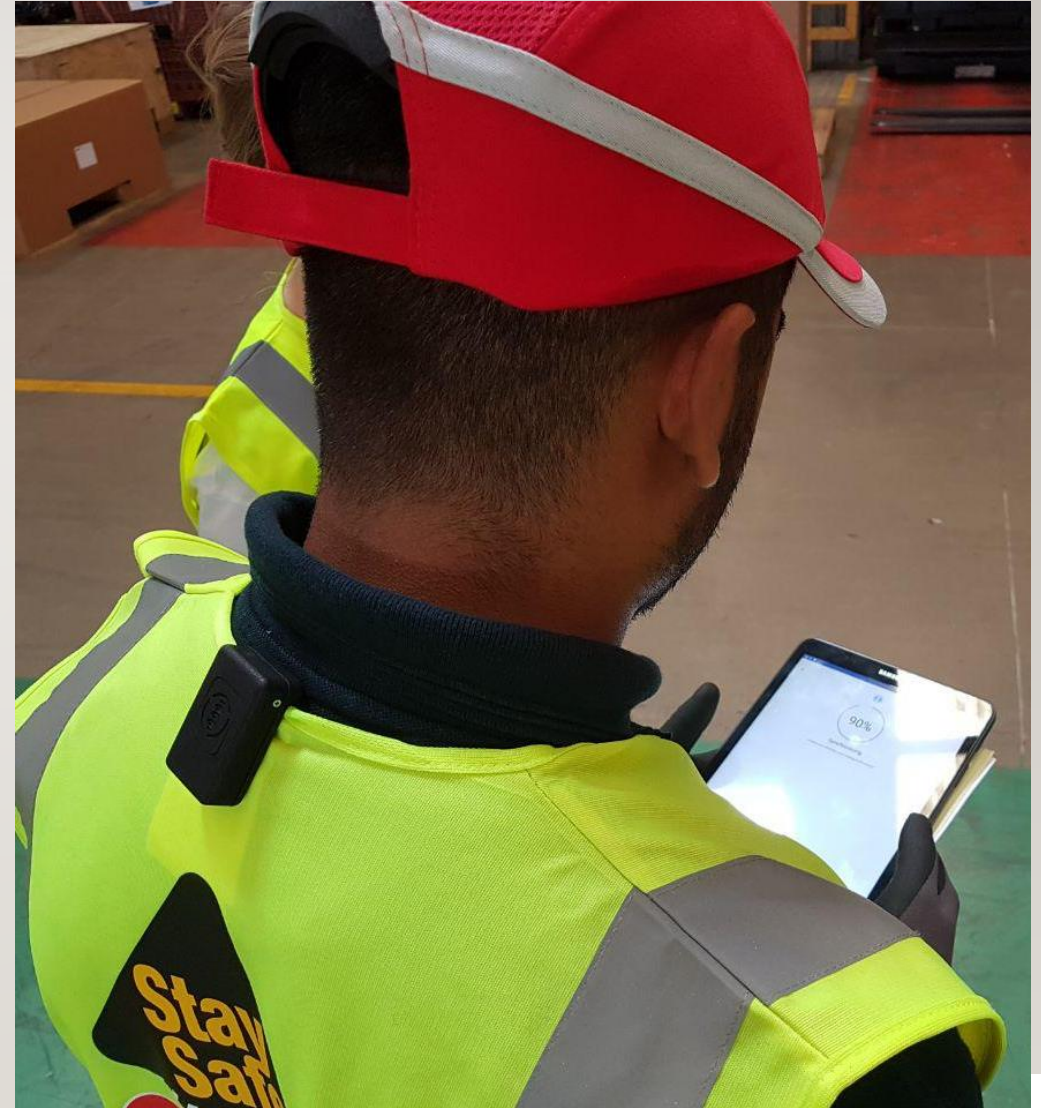
Actually read the privacy policy

BEWARE OF SOLUTIONS THAT ONLY COLLECT DATA FOR MANAGERS

- There was (still is) a trend for big data products – collect lots of data and then find something to do with it

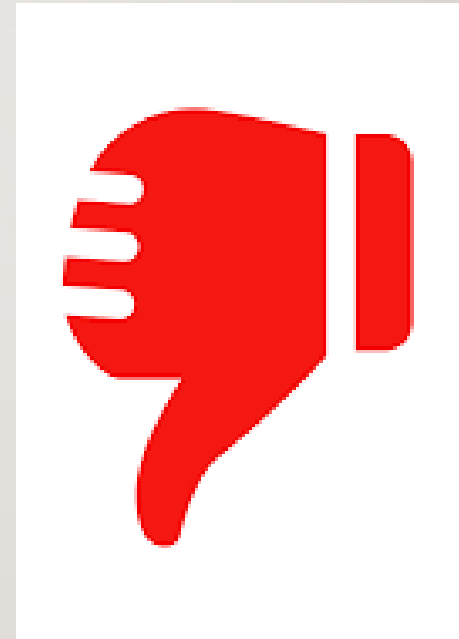
PUT THE WORKER IN THE CENTRE OF THE SOLUTION

- Only the worker sees all their data
- Management see aggregated or anonymised data
- Customers are very open to their workforce – this is about helping, not punishing





1,224

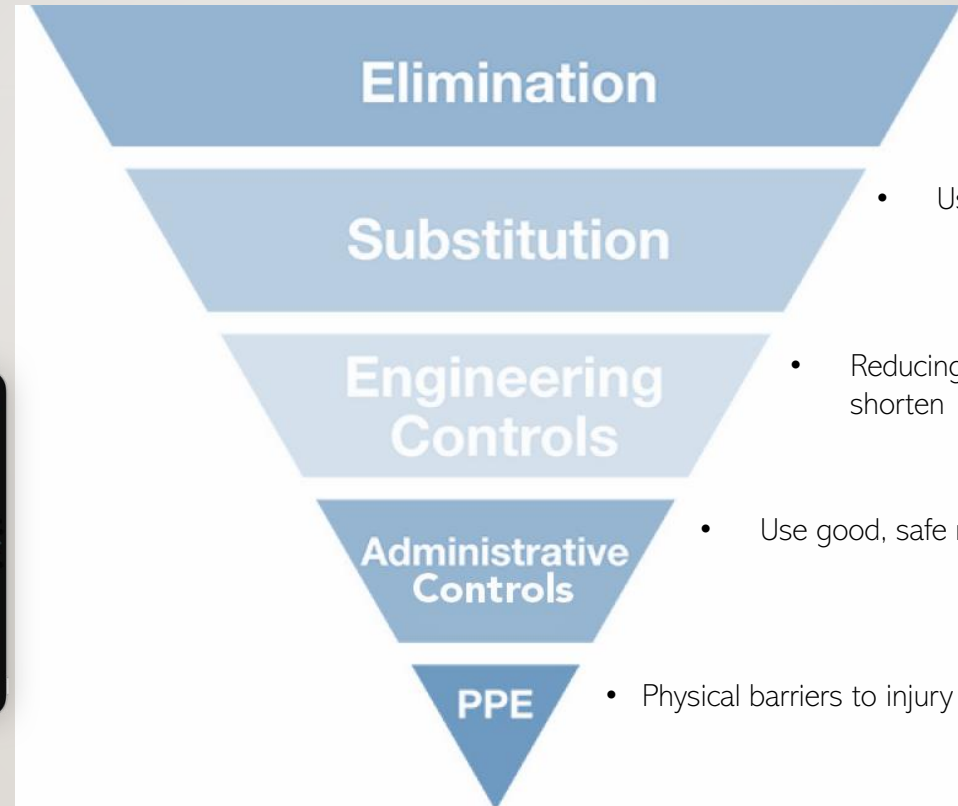
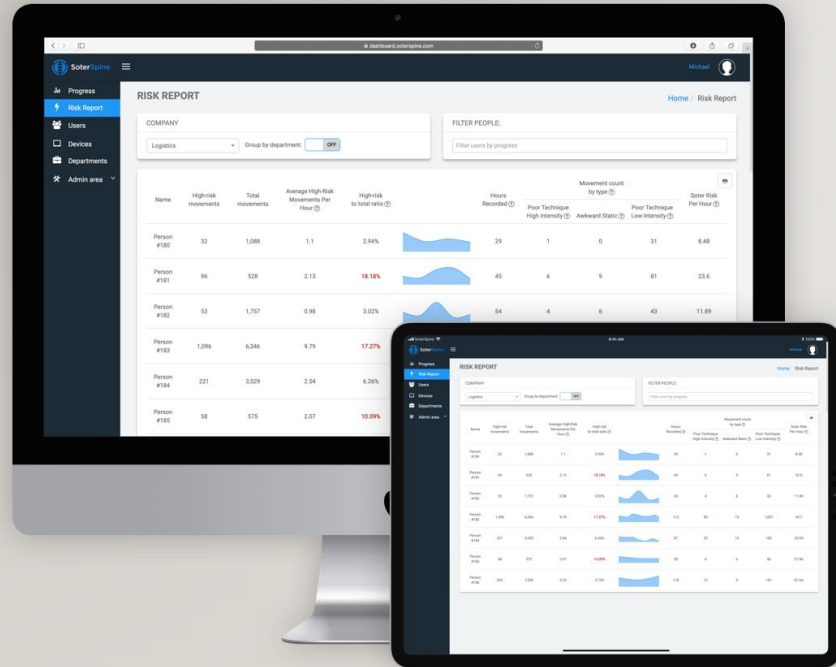


11

Lesson #3: Give value to the worker but support them

Enabling safety managers to leverage data

SoterAnalytics



- Avoiding lifting

- Use Manual Handling Equipment,

- Reducing lifting, split down the load, shorten

- Use good, safe manual handling techniques

- Physical barriers to injury



Notifications raise the awareness of the worker
 Worker gains greater understanding of where risks arise

Lesson #1: Don't just use tech because you need to be (seen as) innovative. Maybe use tech to solve a real problem

Lesson #2: Understand what data is being collected and how it's being used. Put it in a contract that data cannot be sold! Actually read the privacy policy

Lesson #3: Give value to the worker but support them

WHAT'S NEXT FOR SOTER – OUR PROJECTS

OUR BIGGEST CUSTOMER PROJECTS FOR 2019:



- 3,600 workers
- Complimenting Travis Perkins Lift program (to build further awareness & training)
- 45 branches across England/Scotland (3-4 branches a month)



- ~700 workers
- Warehouse & store locations



- ~1,000 workers
- Lays warehouse & Walmart store locations
- Additional analytics & reporting to engineer risk out of business



- 700 worker project in T5 Heathrow
- Each worker goes through program twice in 12month period
- Building model to then role out to other terminals & Gatwick

THANK YOU



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