NATIONAL ERGONOMICS & Conference ErgoExpo®

An Introduction to HUMAN & ORGANIZATIONAL PERFORMANCE

AND

A CALL TO ACTION for the Ergonomics & Human Factors Community

Presented by: Lisa Brooks, Vice President,
ORCHSE Strategies, LLC

Question?

What do you know about Human & Organizational Performance (HOP)?

Is your organization integrating HOP principles & concepts into its operations?

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Discussion Overview

GOAL: Provide an introduction to human & organizational performance (HOP) that will, in turn, create an appetite for you to learn more about HOP and become involved in your organization's HOP initiatives.

Session Overview:

- DEFINE human and organizational performance (HOP) and REVIEW several core concepts of HOP
- Highlight the unique skills and expertise that the ergonomics & human factors community has that is essential for HOP deployment

Human and Organizational Performance

- An Individual
- Working within the organizational system…
- To meet expectations set by leaders.

What is HOP?

Human and organizational performance (HOP) is a risk-based **OPERATING PHILOSOPHY** which recognizes that **ERROR** is part of the human condition and that an organization's **PROCESSES AND SYSTEMS** greatly influence employee actions and choices, and consequently, their likelihood of success.

HOP is *not a program*...

...it is an ***OPERATING PHILOSOPHY***

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HOP…

is more than Human Error Management

Design of Physical Systems, Organizational Systems & Processes, and Culture

Human Factors
+
Organizational Psychology

Principles of Human & Organizational Performance

1. People are fallible, and even the best make mistakes
2. Workers are masters at adaptive problem solving
3. Context drives worker actions and behaviors
4. Leadership's response to failure matters
5. Improvement happens through learning

Principles of Human & Organizational Performance

1. **People are fallible, and even the best make mistakes**
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HOP Principle 1:

People are fallible, and even the best make mistakes.

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ERROR

is *NOT* a choice.

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"Mistakes arise directly from the way the mind handles information, not through stupidity or carelessness."

- Edward de Bono PhD

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HOP Principle 1:
People are fallible, and even the best make mistakes.

- BAD things don't just happen to "BAD" people / employees!!
- Who makes the most mistakes / errors?
- The more experienced employees are better able to RECOVER from their mistakes.
- As work gets more complex, the number and complexity of errors increase

ERROR is *NOT* a choice.

Mistakes & Errors

Violations

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Principles of Human & Organizational Performance

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HOP Principle 2:

Workers are masters at adaptive problem solving

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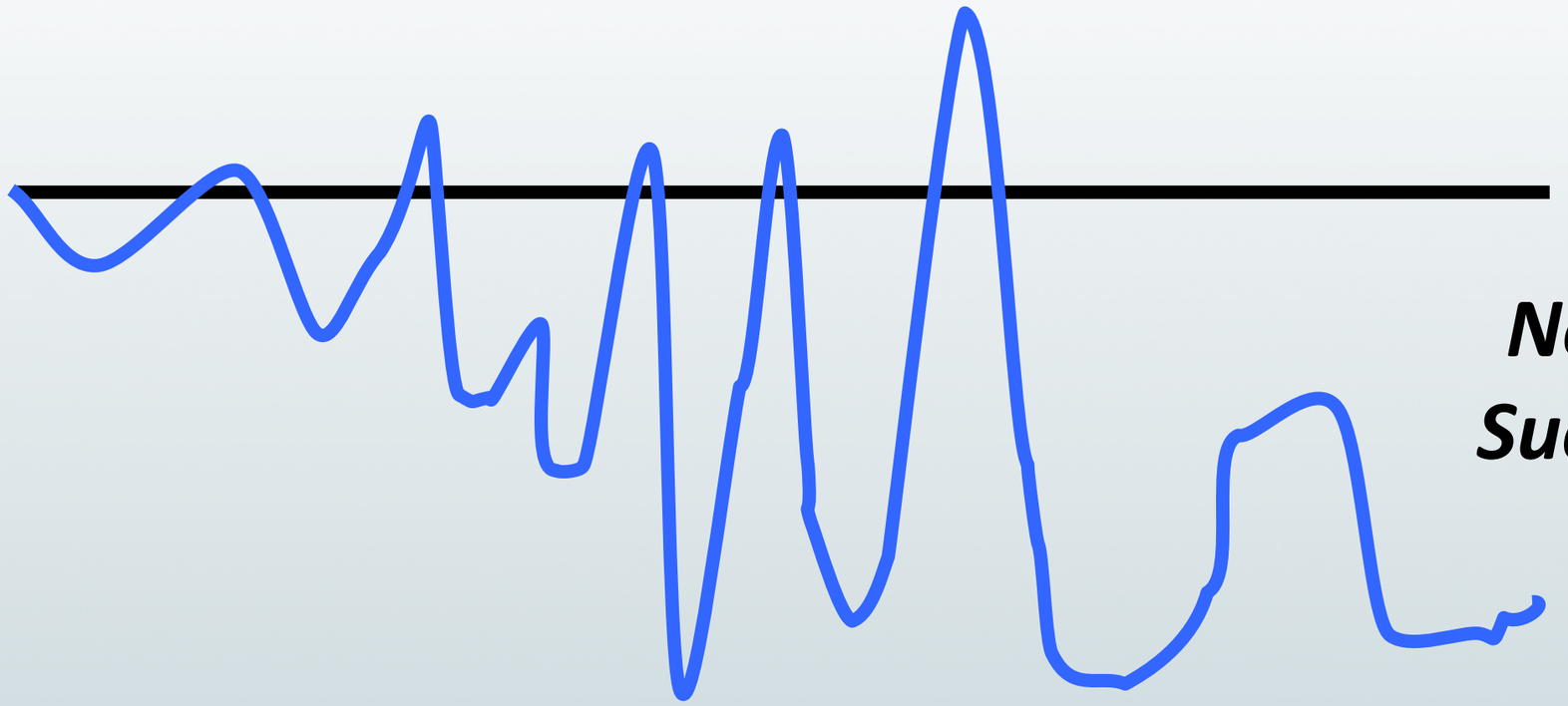
Work as Planned or Imagined [*by Leaders*] Vs. Work in Practice



Normally Successful!

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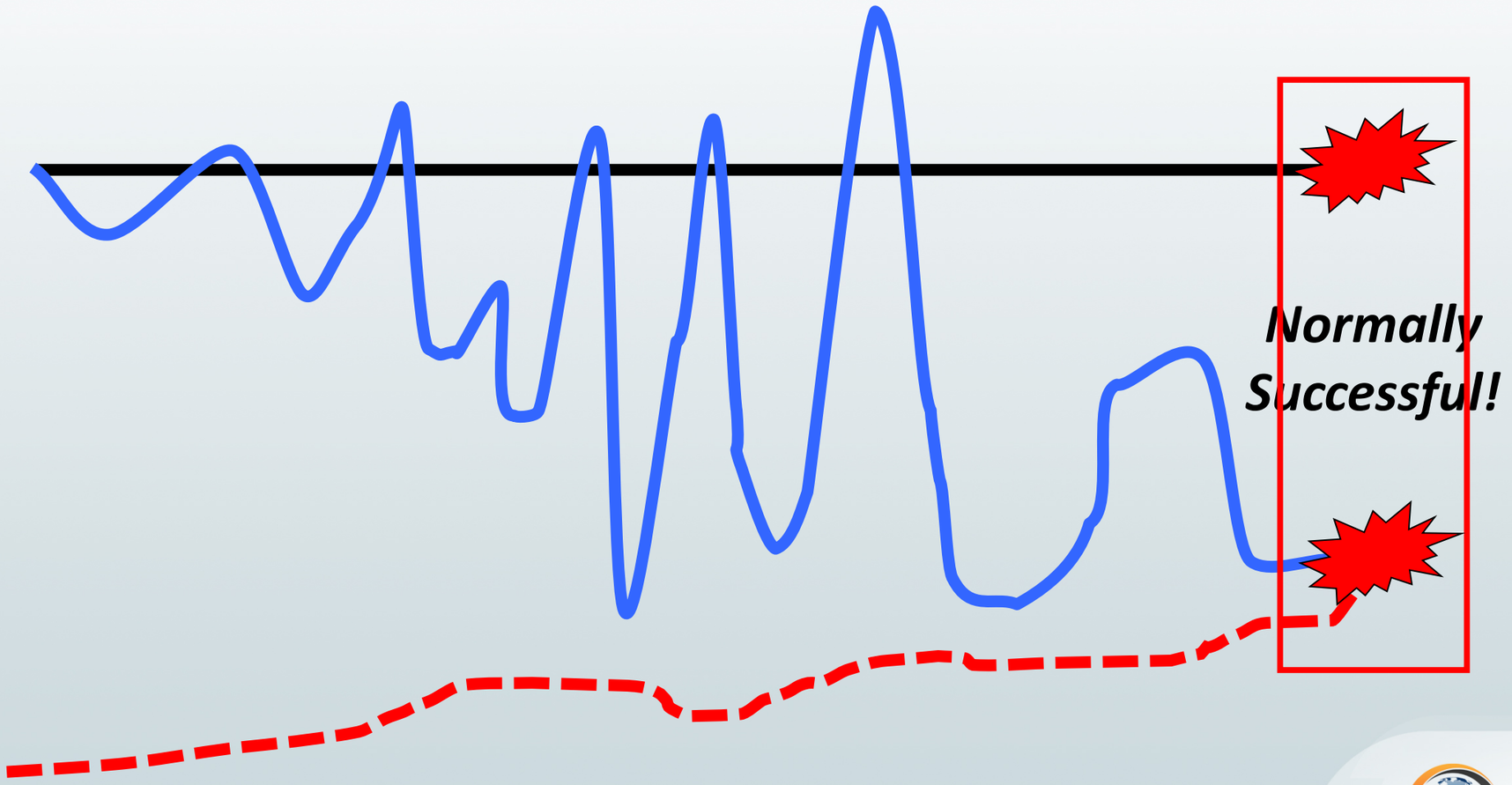
Work Changes Every Day

- All work environments are dynamic
- We expect (pay) workers to get the job done
- Workers are experts at [complex] adaptive problem solving
- Procedures are always underspecified
- Planners are not smarter than workers
- Workers are the "**Masters of the Blue Line**", the heroes of our workplaces

Work as Planned or Imagined [*by Leaders*] Vs. Work in Practice



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Principles of Human & Organizational Performance

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HOP Principle 3:

Context --> ORGANIZATIONAL PROCESSES, VALUES & INCENTIVES, AND OPERATIONAL SYSTEMS --> drives worker actions and behaviors.

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"People do not operate in a vacuum, where they can decide and act all-powerfully. To err or not to err is not a choice. Instead, people's work is subject to and constrained by multiple factors."

— Sidney Dekker

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Local Rationality

People do things that

make sense to them at the time,

under the existing circumstances (expectations, goals, resources, mindset, culture…),

otherwise, they would not do them!

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CONTEXT

- 35% ➢ **Requirements, Expectations, and Feedback**
- 29% ➢ **Tools, Resources, and Job-site Conditions**
- 11% ➢ **Incentives & Disincentives**
- 11% ➢ **Knowledge and Skills**
- 8% ➢ **Capacity and Readiness**
- 6% ➢ **Personal Motives, Expectations, and Preferences**

Task and Organizational Factors

Individual Factors

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Organizational Processes

"Workplaces and organizations are easier to manage than the minds of individual workers. You cannot change the human condition, but you can change the conditions under which people work."

— Dr. James Reason

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Principles of Human & Organizational Performance

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4. **Leadership's response to failure matters**
5. Improvement happens through learning

HOP Principle 4:

Leadership's response to failure matters.

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Workers Don't CAUSE Failures.

Worker's TRIGGER Latent Conditions That Lie Dormant In Organizations Waiting for This Specific Moment In Time.

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What Statement Best Describes Your Company's or Site's Default Response to Failure?

Crime & Punishment

(Blame, Shame, & Retrain)

or

Diagnose & Treat

(Learn First, then Act)

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Responding to an Event

- Hindsight bias is always a factor in event investigations.
- Your perspective, by definition, does not allow you to see the worker's perspective.
- The fact that you are investigating an event arms you with information that the workers did not have!

The Challenge:

Not to let

post-event hindsight

bias our judgment of the

pre-event context.

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HOP Principle 4b:

Leadership's response to failure matters.

Blame fixes nothing!

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Blame SILENCES communications

Blame CUTS OFF access to information

Blame IMPEDES learning

Blame STIFLES improvement efforts

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You can EITHER

Blame & Punish

or

Learn & Improve

You CANNOT do BOTH!!

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Principles of Human & Organizational Performance

1. People are fallible, and even the best make mistakes
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5. **Improvement happens through learning**

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HOP Principle 5:

Improvement happens through learning.

"In a world of change, the learners shall inherit the earth,

while the learned shall find themselves perfectly suited for a world that no longer exists."

- Eric Hoffer

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Building a Learning Culture: A Learning Organization

- Learn from EVENTS, NORMAL WORK AND SUCCESSES
- Learning is integrated into all stages and aspects of work
- Learning happens at all levels of the organization
- **LISTENING** is required in order to learn; listening is a skill and takes practice
- Learn first, then improve - -> otherwise you might just have made things worse!
- Top organizations are obsessed with learning!

Principles of Human & Organizational Performance

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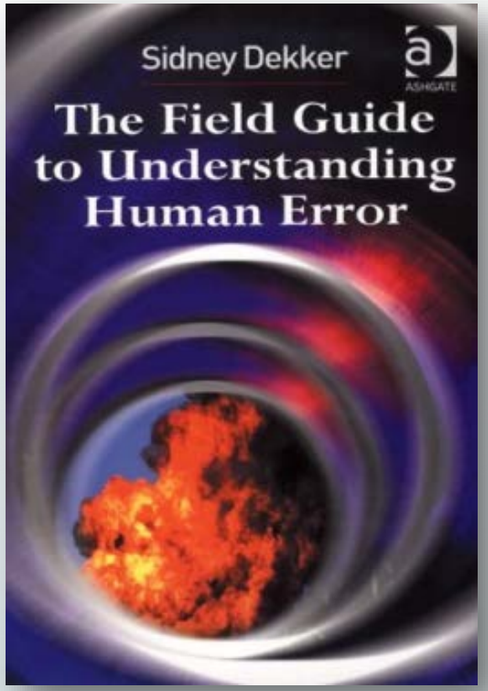
- Improvement happens through learning

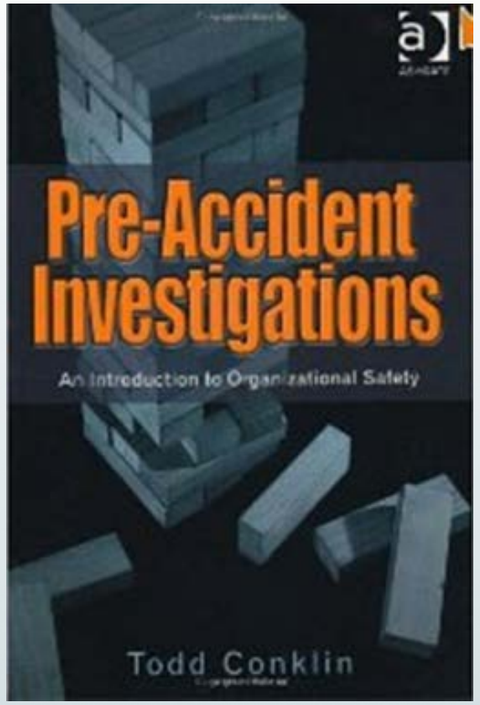
HOP

What's next?

Recommended Reading



The Field Guide to Understanding Human Error
By Sydney Dekker



Pre-Accident Investigations
By Todd Conklin

Additional Recommended Reading

- James Reason
- Sydney Dekker
- Erik Hollnagel
  - Safety I and Safety II
  - The ETTO Principle
- Risk Based Thinking by Tony Muschara
- Managing the Unexpected by Karl Weick & Kathleen Sutcliffe
- The Checklist Manifesto by Atul Gawande
- Beyond the Checklist by Suzanne Fordon, Patrick Mendenhall and Bonnie Blair O'Connor
- The Art of Humble Inquiry by Edgar Schein
- Disastrous Decisions: The Human and Organisational Causes of the Gulf of Mexico Blowout by Andrew Hopkins

HOP is a JOURNEY

Not a DESTINATION!

Enjoy the RIDE!

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Questions?

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NATIONAL ERGONOMICS Conference & ErgoExpo

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Innovation in Wellness and Injury Prevention

Using Technology to Build a Safer Future for Workers

Photo courtesy Microsoft

Presented by Kevin Lombardo

Agenda

- Workplace Injuries 2020
- The Costs of MSDs and Pain/Aging Workforce
- Connected Industrial Work
- Safety Technology Solutions
  - Artificial Intelligence
  - Exoskeletons & Case Study
  - Wearables
  - Live Virtual Mobility & Conditioning Training
  - Live Virtual Self-Care Training
  - Virtual Ergonomics Evaluation and Training
  - Fatigue Management & Case Study
- Next Steps

Photo courtesy Sarcos

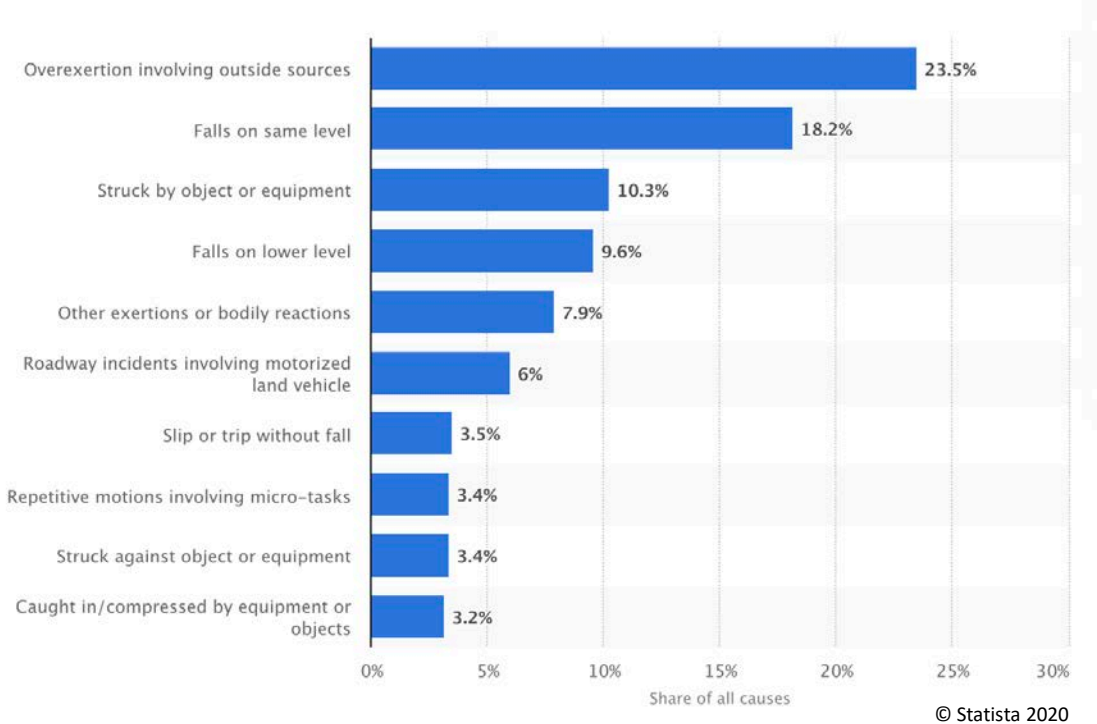
The Top 10 Causes of Disabling Workplace Injuries 2020

*"A worker is injured on the job **every 7 seconds**."*

- National Safety Council

*"On average, U.S. companies lose more than **$1 billion per week** due to disabling workplace injuries."*

- Risk & Insurance



Total Direct Cost = $560B to $635B*

— Incremental Health Costs = $261B to $300B

— Lost Productivity = $299B to $334B

Presenteeism = 57.5 days per year (10X cost of absenteeism)**

Opioid Crisis = $78.5 billion a year***

Workers' Comp = $20 billion in Direct Cost****

Fatigue = $136 billion a year in health-related lost product and more than $70 million*****

Connected Industrial Work: The Potential of Safety Technology

Photo courtesy Upskill

*"Humans still perform **72% of manufacturing tasks**."*

- Kearney World Economic Forum

" **85% of manufacturers globally** *believe connected workers will be commonplace in their plants*."

- Accenture

Artificial Intelligence

- PPE detection, safety zoning and thermal imaging capabilities using cameras and software augmented
- Real-time fall, vehicle collision detection, workplace hazard alerts and thermal imaging capabilities
- Early detection and investigation in preventing COVID cluster outbreaks

Exoskeletons


Photo courtesy Audi

- Wearable machines suited with motorized joints that aim to minimize strain and injury
- Mechanical or operate with a mix of mechanics and electricity. The frames can be comprised of hard material, like metal, or soft materials, like cloth and textiles, depending on the suit and its function
- Provides lift support, weight dispersion, posture correction, etc.

Aviation Plant Case Study

- High rates of overexertion injuries and chronic back, neck, and shoulder pain
- Modular ergonomic exoskeletons
- Significant reduction in MSDs and RSIs rates after several months
- Increased employee morale and reduced workers' comp claims

Wearables

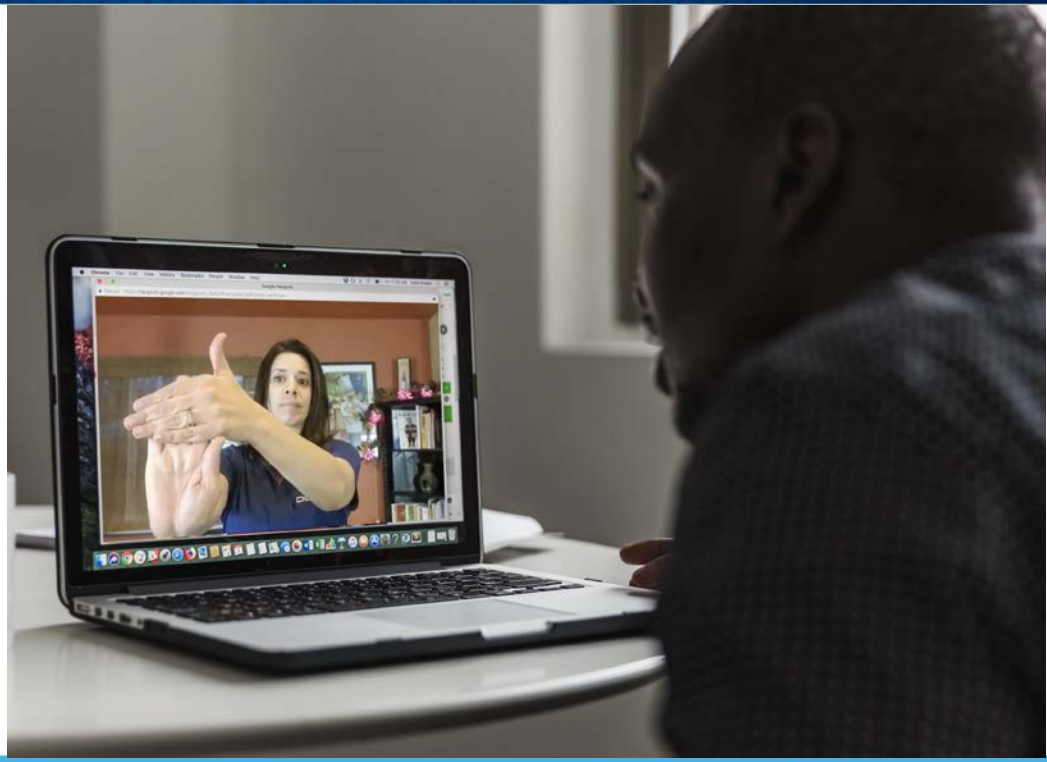
- Deep understanding of your workforce and the risks they face each day
- Sensor-embedded work suits provide insights into worker performance that cannot be obtained through traditional observation, while also providing real-time updates to inform effective interventions

Live Virtual Mobility & Conditioning Training

- Video webinars and live video trainings via Zoom or Skype
- Real-time guidance to correct mechanical issues and potentially harmful behaviors to reinforce techniques that may have gone unused during the shutdown

Live Virtual Self-Care Training

- Short video call sessions via Skype or Zoom
- One-on-one instruction in a detailed range of self-care techniques designed to massage sore muscles and joints, relieve pain and promote effective work practices



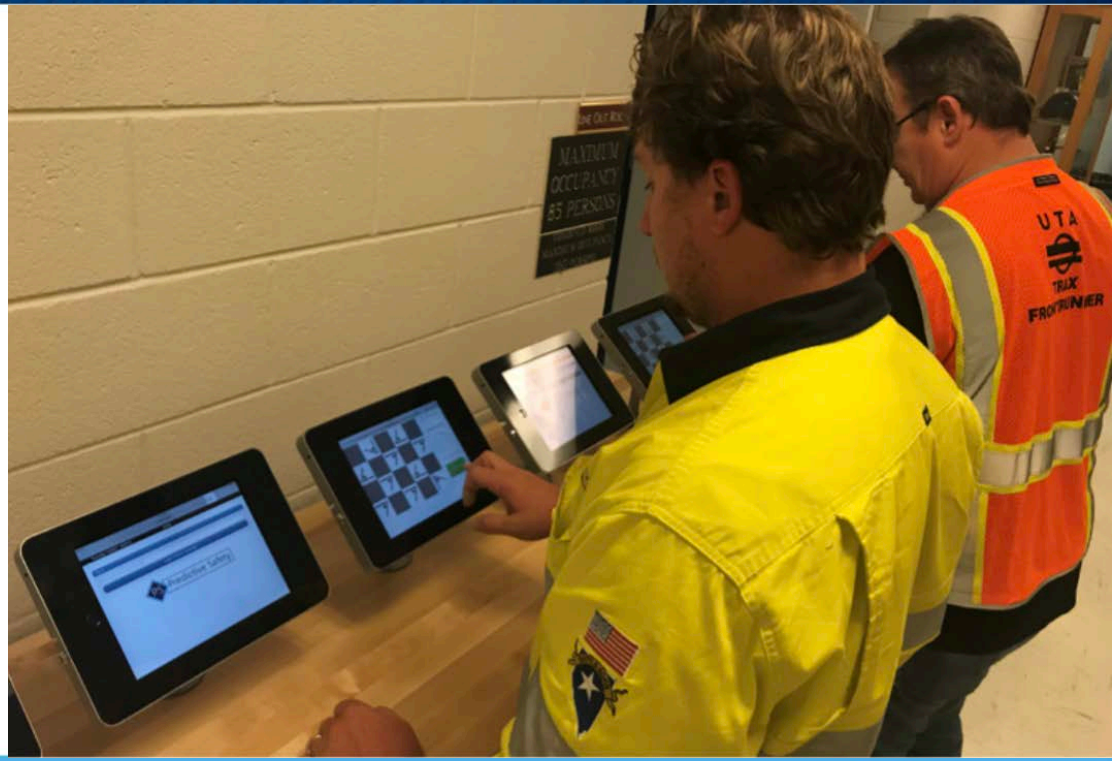
Virtual Ergonomics Evaluation and Training

- Live virtual ergonomic evaluation brings the expertise of a certified ergonomist to your worksite or employees' home offices without the need for in-person interaction

- Real-time instruction to help employees set up a safe workspace at home and address proper body mechanics, posture, and strategies for minimizing pain and injury risk

Fatigue Management

- Real-time fatigue identification
- Compare and monitor each employee’s alertness with their personal baseline before, during and after shift
- Identify at-risk employees and prevent fatigue-related injuries and presenteeism



Metal Processing Plant Case Study

Challenge: high turnover, fatigue and high workers' comp costs

Solution: data-based impairment detection system

Results 2 years later:

- Reduced workers' compensation costs by 70%
- Increased worker retention by 35%
- Cut drug testing costs by 90%
- Overall productivity increased by 11%

Next steps

1. Identify your safety and injury prevention goals
2. Identify direct and indirect safety costs
3. Evaluate your user environment
4. Identify your data requirements
5. Choose user-friendly tech and vendor support
6. Bring it all together in a solution that addresses targeted outcomes

Creating a Connected Industrial Workforce

Now is the time to invest in planning and proactive safety tech solutions to ready your organization for a successful 2021.

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Innovation in Wellness and Injury Prevention