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ALABAMA'S TRADE ASSOCIATION FOR ALABAMA'S MANUFACTURERS

Best Practices in Dynamic Movement & Total Worker Health

Presented by Mark Schakowsky

Speaker Info



Mark Schakowsky **Director, BLOKINETIX**

After graduating from the Kelley School of Business at Indiana University, Mark spent several years working in finance and risk consulting before coming to BLOKINETIX. For the past 10 years, he has helped Fortune 500 companies in the manufacturing, food production, transportation, hospitality, utility, and construction industries save millions of dollars by reducing worker's compensation costs and improving cultures.

Mark has also served as the Treasurer for the ASSP Greater Chicago Chapter for the past two years.

The BIOKINETIX Mission

Founded in 2004, BIOKINETIX is an MBE that has designed and implemented injury prevention, ergonomic, and well-being programs that have saved businesses millions of dollars by reducing workers' compensation costs, medical costs, and lost time.



Employees

Improved musculoskeletal
functionality

Enhanced quality of life
both during & beyond work

Employer

Lower injury rates

Lower claims costs

Lower absenteeism

Presentation Agenda

Objective: Reduce musculoskeletal injuries by creating optimal work conditions and advancing employee well-being.

- I. Total Worker Health & Injury Causality
- II. Dynamic Exercise in the Workplace
- III. Injury Risk Mitigation: Approach & Core Modalities

Total Worker Health & Injury Causality

What is Total Worker Health?

NIOSH:

- Total Worker Health® is defined as *policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being.*
- Acknowledges that **work is a social determinant of health**

What it's *not*:

- Doesn't limit concept of well-being to merely *physical* health
- Doesn't limit concept of safety to *risk management*

Dimensions of Wellness

- [illegible]

Monocausal vs. Multifactorial

- MSDs typically occur as a result of a combination of work-related and non-work-related factors
- Reactive approaches don't get to the root of the problem—the multifactorial nature of musculoskeletal injury development requires a multifactorial approach

Injury Risk Factors

The following conditions are associated with a higher risk of occupational injury:

Job Demands

- Required daily quotas
- Shift lengths and scheduling

Repetitive Tasks

- Cumulative stress and overuse of specific muscle groups
- Muscular asymmetry, leading to soreness & discomfort

Workforce Challenges

- Aging or inexperienced employees
- Postural instability, joint disease & loss of muscle strength
- Chronic conditions including arthritis & heart disease

This risk is magnified by:

Behavioral Risk Factors

- Ineffective physiological preparation
- Unaddressed soreness & discomfort
- Improper biomechanics
- Poor health & well-being habits

And if left unmitigated, often culminates into...

**COMPOUNDED
INJURY RISK**

Risk Trends

Workforce characteristics

- By 2024, 25% of U.S. workers will be age 55+
- While accident **frequency** decreases with age, injury **severity** and **fatality** increase

Physical inactivity

- Working-age Americans spend an average of 6.4 hours per day on sedentary behavior
- 54% of adults do not meet the min. recommendation for engaging in exercise in leisure time

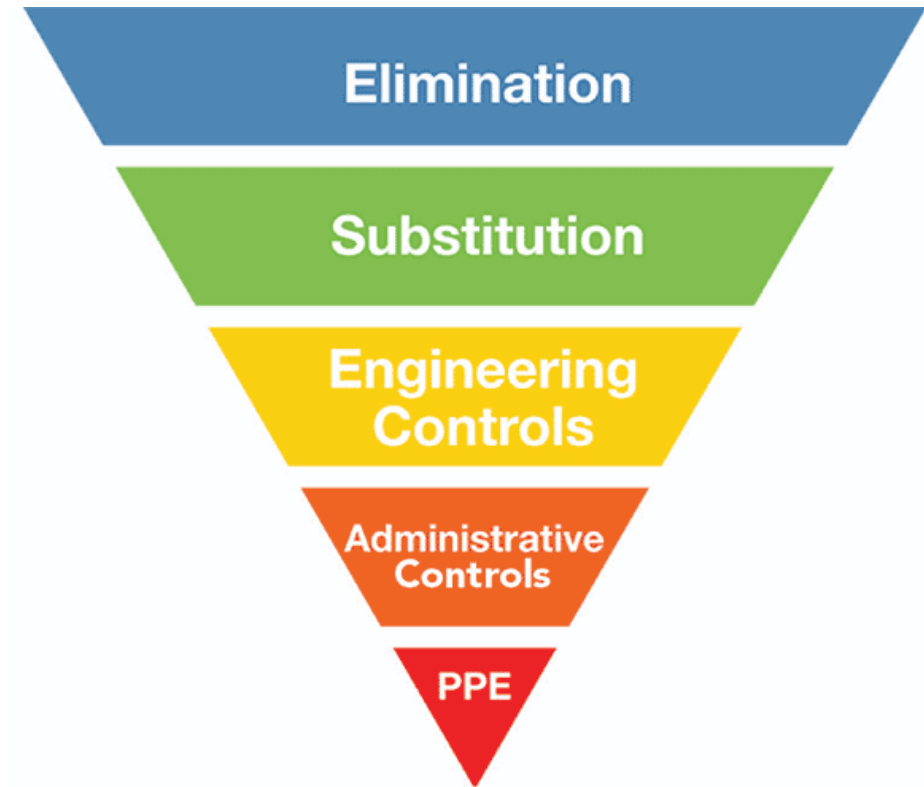
Poor health behavior & comorbidity

- Strong association between acute work injury and chronic health conditions including type II diabetes, high blood pressure & heart disease
- Adults with the highest rates of physical inactivity, poor nutrition, tobacco & alcohol consumption are the least likely to seek out preventive healthcare voluntarily

Dynamic Exercise in the Workplace

Risk Mitigation Strategies

NIOSH Hierarchy of Controls



BIOKINETIX 3E Process



Exercise Types

Warming Up

Job task-specific movements that activate muscles while generating force

- Progresses from large → small muscle groups, and from simple → complex movements
- Increases blood circulation
- Increases temperature
- Prepares joints for movement
- Improves balance & coordination

Resetting

Activates muscle groups opposite those repetitively used to create symmetry

- Helps mitigate the repetitive stress of daily job tasks
- Activates appropriate muscle groups and inhibits chronically contracted muscles (Reciprocal inhibition)
- Reduces nerve impingement
- Enhances blood flow
- Creates symmetry in overused muscles & joints

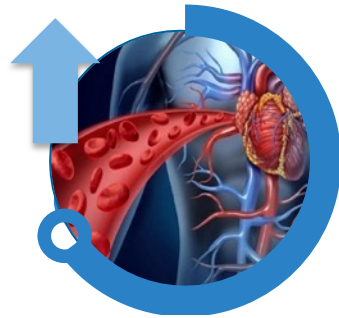
Strength & Conditioning

Working muscles against an opposing force to increase strength

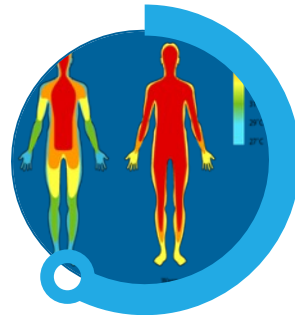
- Short duration, effective + appropriate intensity
- Strengthens job-specific muscles to reduce risk of injury
- Increases force generation for lifting, pushing, pulling & carrying
- Increases tensile force in muscles to reduce strains and sprains
- Increases condition of muscles to recover from repetitive stress

Warming Up

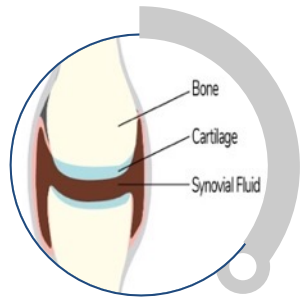
A modern, sports medicine derived method that engages the muscles in movement and properly prepares the body for the physical demands of work.



Increases blood circulation



Increases body temperature



Prepares joints for movement



Improves balance & coordination

	Warming Up	Stretching
Signals the sympathetic nervous system	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Readies nutrients from the liver	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Increases cellular metabolism	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dilates lungs	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Creates pliability in tendons & ligaments	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Increases lymphatic circulation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Primes somatic nervous system	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Enhances psychological preparedness	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Dynamic Warm-Up

1. Row to Rotation to Reach

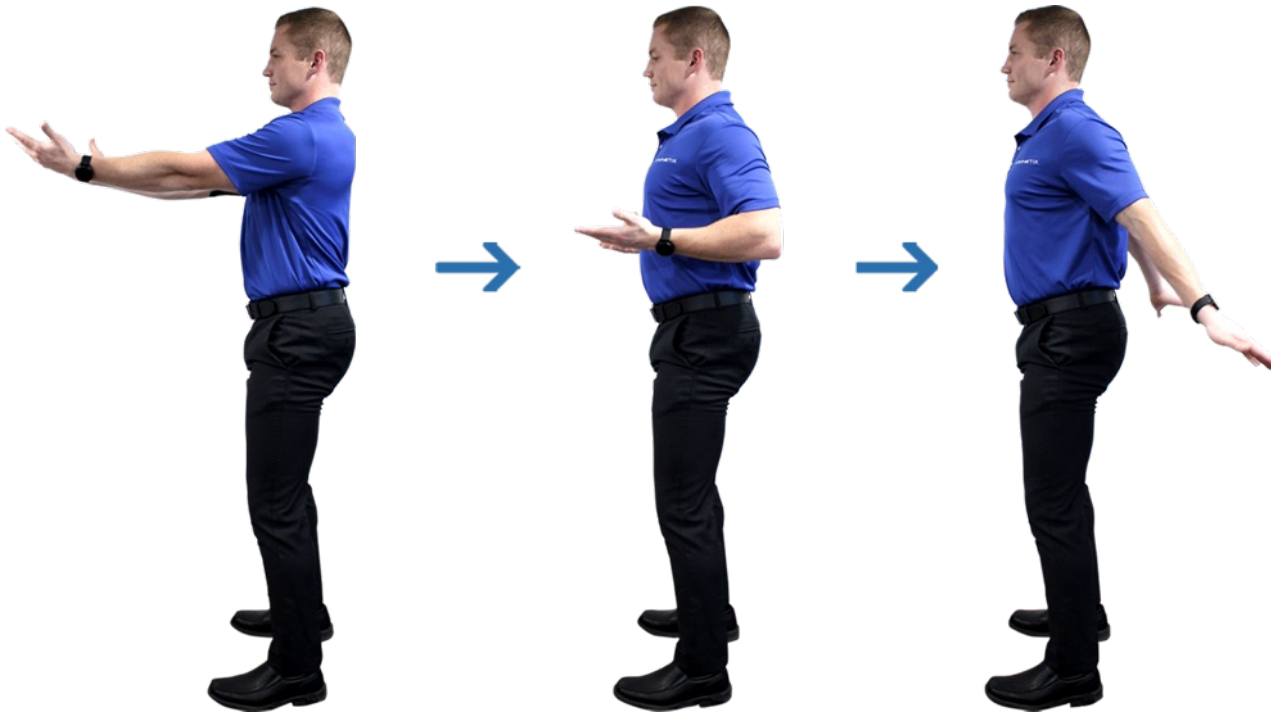
Movement Instructions

1. Start standing with both arms forward
2. "Row" arms to your body
3. Rotate arms outward and reach up
4. Bring arms back into starting position and repeat.



Dynamic Warm-Up

2. Triple Extension



Movement Instructions

1. Start standing with both arms forward
2. "Row" arms to your side
3. Extend arms and wrists behind your body
4. Bring arms back into starting position and repeat.

Dynamic Warm-Up

3. Fold Forward



Movement Instructions

1. In a split stance, feet about 6-12" apart, bend the front knee, keeping the knee behind the toe.
2. Fold forward at the hips, keeping an upright chest and arms in line with the torso.
3. Shift your weight to your back foot and push your hips forward, while lifting your chest, and bringing the arms overhead in line with your torso.

Dynamic Warm-Up

4. Open The Gate

Movement Instructions



1. Start with feet hips-width apart
2. Raise leg with knee bent to a comfortable height
3. Rotate leg outward at the hip. Your knee should be at a near 90 degree angle with your opposite foot
4. Reverse the movement to return to starting position.

Dynamic Warm-Up

5. Kick and Curl

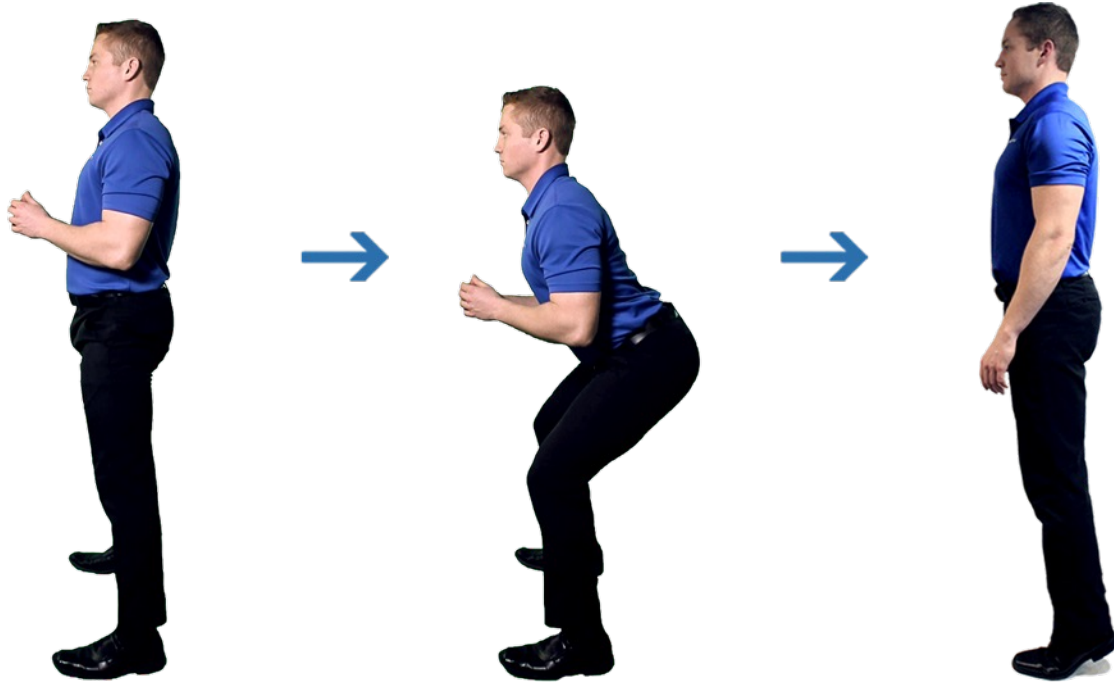
Movement Instructions



1. Start in a standing position
2. "Hinge" at the hip and extend leg backward
3. "Kick" heel to rear
4. 10 reps and then repeat for the opposite leg

Dynamic Warm-Up

6. Squat To Calf Raise



Movement Instructions

1. Start in a standing position with arms in front of the body and feet shoulder-width apart
2. Perform a shallow squat. Keep knees behind toes and shoulders above your knees.
3. Return your body to starting position, then lift heels off the ground by pushing with your toes.

Resetting

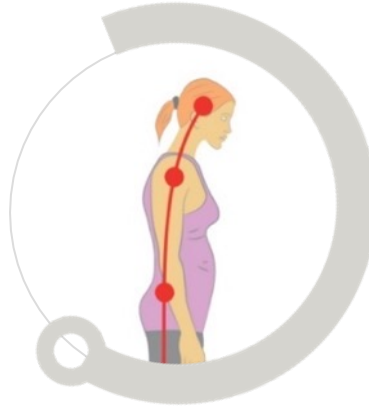
Activating the muscle groups opposite the ones being repetitively used to create symmetry



Helps combat
repetitive stress of
specialized job tasks



Creates symmetry in
overused muscles & joints



Prevents
poor posture



Improves
manual dexterity



Increases physical
resilience

Posture Reset

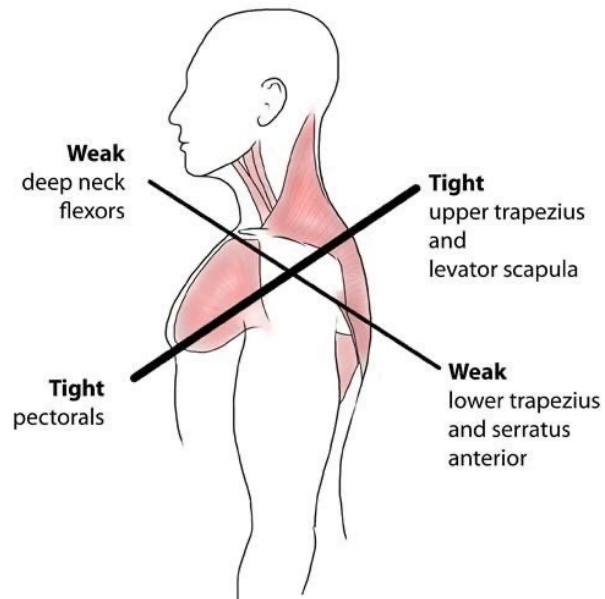
Normal Shoulder Rounded Shoulder



Scap Squeeze



Arm Scissors



Chin Tuck



Mini Warrior



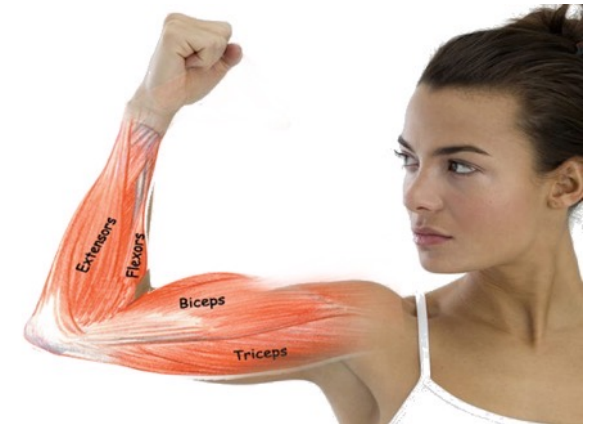
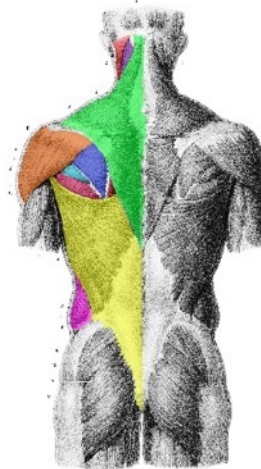
Strength & Conditioning

Resistance-based conditioning to increase muscle strength + endurance



Increases force generation for lifting, pushing, pulling and carrying

Increases tensile force in muscles to reduce strains & sprains



Increases condition of muscles to recover from repetitive stress

PUSH-UPS

...Any volunteers?

Exercise Solutions for the Workplace Setting

WOW



Theraband



Power Web



Low Back Station



Exercise Modality Matters

*Going **beyond** passive stretching programs*

Exercise interventions have great value from a behavioral standpoint, but this value is derived from the effectiveness of the activity on a physiological level.

In order to successfully reduce sprains, strains and other soft-tissue injuries, the exercise modality must improve function on the soft tissue level.



Why exercise is an incredibly effective method of physiological preparation & conditioning:

- ✓ Increases soft-tissue capacity
- ✓ Increases soft-tissue resilience
- ✓ Increases soft tissue's ability to repair & recover

Why On-Site Exercise?

*Exercising **in the workplace** has the greatest potential to maximize employee performance and increase engagement.*

A 2015 analysis of 61 studies identified and assessed 30 unique workplace intervention types in the prevention of upper-extremity MSDs¹:

- Out of all categories, **resistance exercise** showed the strongest evidence of effectiveness
- Study authors concluded that “implementing a workplace-based resistance training exercise program can help prevent and manage UEMSD and symptoms.”

A 2015 randomized controlled trial compared the effects of work-based vs. home-based exercise on work ability². The work-based group demonstrated:

- Greater program adherence
- Reduced average pain intensity in neck, shoulder, and lower back
- Decreased number of sickness absences
- Improved ability to perform job tasks
- Increased muscle strength



Injury Risk Mitigation: Approach & Core Modalities

Integrating Sports Medicine Concepts

From top-caliber professional athletes to industrial athletes, Athletic Training sports medicine skillsets have been leveraged for decades to prevent injuries and enhance human performance.



Top professional sports organizations prevent injuries to win championships.

Top companies prevent injuries to remain industry leaders and stay ahead of the competition.



Cross-Departmental Collaboration



Cross-Departmental Collaboration

*Incorporate **proactive** medical professionals into your safety management system*

Reactive

- Working with physicians, physical therapists and/or on-site OHNs **after an injury** has already occurred
- Generally limited to rehabilitation and/or case management



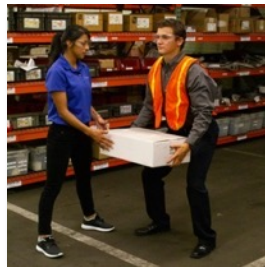
Proactive

- Collaboration between medical and safety professionals to **actively mitigate injury risk and support employee well-being**, both collectively and on an individual level
- Strengthens health promotion & health protection efforts **and** safety/risk management objectives
- The value of applying Athletic Training sports medicine skillset within the occupational setting

Core Intervention Modalities



***WARM-UP & EXERCISE
PROGRAMS***



ON-SITE OBSERVATION



INDIVIDUALIZED CARE

Department Warm-Ups

DOCK DEPARTMENT WARM-UP

Pre-shift exercise program designed for physical preparation and recovery that helps prevent musculoskeletal injuries

1

WOODCHOPS



2

HINGE TO KICK



3

BEND & REACH



4

TRIPLE EXTENSION

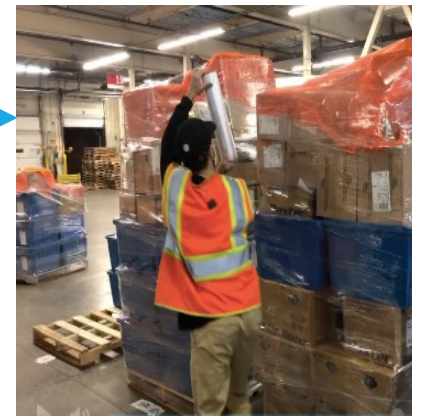
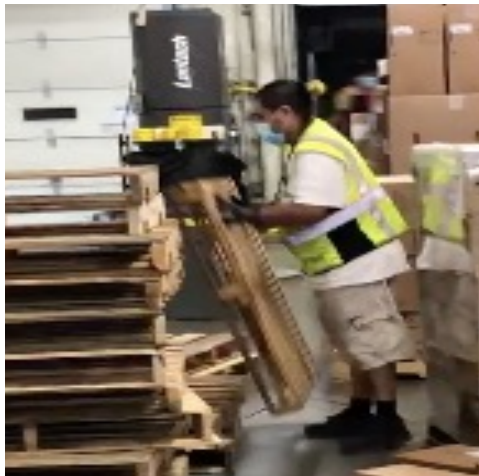


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SHOULDER CIRCLES



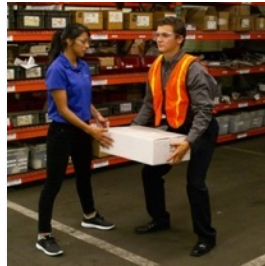
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Core Intervention Modalities



***WARM-UP & EXERCISE
PROGRAMS***



ON-SITE OBSERVATION

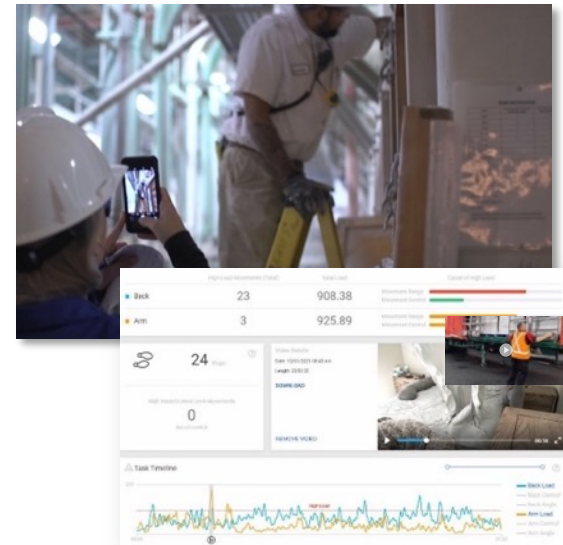


INDIVIDUALIZED CARE

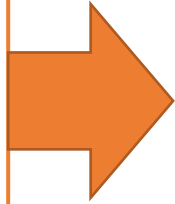
On-Site Job Task Observation

An on-site presence allows for proactive engagement where injuries are most likely to occur

- Athletic trainers have the unique ability to intervene in the early complaint stage as well as the return to work process.
- Employees are more likely to adopt positive behavioral change when given immediate feedback—identifying and correcting poor posture or at-risk body positioning in **real time** helps create improved awareness of proper positioning & safety techniques
- Insights gained from observation can be used to inform **body mechanics coaching & ergonomic education**.
- **Wearable technology** can be incorporated to capture, analyze and mitigate specific injury risk factors with a higher degree of precision



Department Resetting



Chin Tuck



Arm Scissors



Scap Squeeze



Mini Warrior



Core Intervention Modalities



***WARM-UP & EXERCISE
PROGRAMS***



ON-SITE OBSERVATION



INDIVIDUALIZED CARE

Individualized On-Site Care

- Objective: mitigate minor **soreness & discomfort** before they progress into injuries and enhance **well-being**
- **Provide guidance** for wellness initiatives and goals such as stress, weight loss, and chronic illness prevention/management
- Adept in **facilitating valuable communication** between medical professionals and employees, particularly high-risk individuals who are less likely to seek out preventive care for themselves
- Helps ensure workers are able to receive and benefit from the preventive services that are already available to them.



Functional Movement Screening

A systematic tool that measures basic movement patterns to identify potential risk factors for injury

Includes 7 movement patterns and 3 clearing tests, which are used to proactively identify:

- Pain with movements
- Movement limitations, dysfunction, or asymmetries
- Problems with mobility and stability

Corrective exercise interventions are then given to help:

- Mitigate any dysfunction observed in movement
- Maintain functional ability



Prescribed Corrective Exercise

Program Testimonials



Marvin D.
Bright Stack | 45 years

"The exercises (have improved) and increased my walking ability. I've been able to push a lawn mower for the first time in over a month and I've been able to carry heavier loads!"



Michael M.
Maintenance Specialist | 31 years

"Before the start of BIODINETIX, I have suffered with flare-ups in my mid back for the last several years. Since starting my correctives, I have become more aware of body. Therefore, for the first time in years, I was able to go camping, set up, and sleep without being sore the next few days afterwards."



Bud K.
Distribution Supervisor | 34 years

"Over time, I had developed discomfort when walking around my hip joint and down the back side of my leg. BIODINETIX created a plan for me that involved a few stretching and strengthening exercises that I did on a regular basis. After a few weeks, my discomfort level has decreased and am able to enjoy moving around more."



Russell G.
PM Warehouse Supervisor

"The warm up has become a staple to our pre-shifts. It has changed the feel of the startup meeting. Participation and work attendance has increased since BIODINETIX has arrived. As a person that came from Selection, I feel the benefits of the program and wish it was here earlier. Our onsite resource is very helpful and knowledgeable. Any time someone has a question, she's there eager to answer. Truly an awesome program."



Julie V.
Transportation Manager

"The warm up has been such a positive experience for our drivers. Everyone is so engaged and it helps us all wake up especially at such odd hours. Rachel has been so helpful with educating the drivers on body mechanics and general health and wellness."



Derick L.
Chicago Mill Safety Supervisor | 9 years

"I had been trying to implement a stretching program with the employees for the past 7 years and had no success. Today, our employees complete the 3-Minute Warm-Up everyday before work. I am so pleased to have BIODINETIX on board and our athletic trainer, works well with all the employees. It's great how comfortable employees have become at discussing their personal soreness and discomforts. The safety culture at our plant is much improved since implementing this program."

For further insight into exercise as a means of protecting your workforce, read our guest article in VPPPA's The Leader:



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